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In Pursuit of Clean Air: A Data Book of Problems and Strategies at the State Level

Volume 5 Federal Regions VIII, IX, and X

D. B. Garvey and D. G. Streets

ARGONNE NATIONAL LABORATORY
Energy and Environmental Systems Division

prepared for
U. S. DEPARTMENT OF ENERGY
Assistant Secretary for Environment
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ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue
Argonne, Illinois 60439

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IN PURSUIT OF CLEAN AIR: A DATA BOOK OF PROBLEMS AND STRATEGIES AT THE STATE LEVEL

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by

D.B. Garvey and D.G. Streets

Integrated Assessments and Policy Evaluations Group
Energy and Environmental Systems Division

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U.S. DEPARTMENT OF ENERGY
Assistant Secretary for Environment
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Volume 5

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PREFACE

The Clean Air Act Amendments of 1977 reaffirmed a national commitment to clean air, setting up rigorous requirements intended to achieve and maintain the National Ambient Air Quality Standards in all areas of the country. The solutions to air quality problems, however, must take place at the state and local levels. This five-volume report provides a state-by-state summary of air quality, nonattainment areas, and attainment strategies, based, in part, on the revised State Implementation Plans submitted in response to the 1977 Amendments. The report is designed to provide useful information for policy analysis in the Department of Energy, especially for the examination of possible areas of conflict between the implementation of a national energy policy calling for the increased use of coal and the pursuit of clean air. The report provides an initial basis of information and will be updated as SIPs for nonattainment areas are altered and as the designations of areas are changed.

Major funding for this project was provided by the Policy Analysis Division of the Office of Technology Impacts, DOE/EV, with additional support from the Environmental Impacts Division of OTI. Project direction was provided by Doug Carter of PAD/OTI and John Wilson of EID/OTI.

The report was prepared by the Energy and Environmental Systems Division (EES) of Argonne National Laboratory (ANL), with the assistance of the ANL Applied Mathematics Division in digitizing the maps of designated nonattainment areas by use of the ALICE system. Mary Snider (ANL/EES) prepared the computer maps and D. Seymour (ANL/EES) provided the computer data. Additional contributions to the report were provided by R. Kotecki, former staff member of EES.

LIST OF ABBREVIATIONS

APCD	- Air Pollution Control District
AQCR	- Air Quality Control Region
Btu	- British thermal unit
CAAA	- Clear Air Act Amendments
EPA	- Environmental Protection Agency
FGD	- flue gas desulfurization
FMVECP	- Federal Motor Vehicle Emissions Control Program
FPC	- Federal Power Commission
LAER	- lowest achievable emission rate
m^3	- cubic meter
MSER	- most stringent emission rate
MM	- million (10^6)
MW	- megawatt (10^6 watts)
µg	- microgram (10^{-6} gram)
NAAQS	- National Ambient Air Quality Standards
Pollutants	- CO = carbon monoxide
	HC = hydrocarbons
	NO_x = nitrogen
	O_x = photochemical oxidants (including ozone)
	PM = particulate matter
	SO_2 = sulfur dioxide
	TSP = total suspended particulates
	VOC = volatile organic compounds
ppm	- parts per million
PSD	- prevention of significant deterioration
RACM	- reasonably available control measures
RACT	- reasonably available control technology
SAROAD	- Storage and Retrieval of Aerometric Data
SIP	- state implementation plan

INTRODUCTION

The actions that must be taken to achieve national air quality goals, as prescribed by federal clean air legislation and subsequent regulations promulgated by the Environmental Protection Agency (EPA) may have significant impacts on the future siting and emission control requirements for new major sources of emissions, on future patterns of fuel use, and on the success of a national energy policy designed to increase the use of coal in both the utility and industrial sectors of the economy. Since the most recent amendments to the Clean Air Act were passed by Congress in August 1977, attention has focused on the implications of various portions of the legislation for economic growth and development in general, and on the possible conflicts that might arise between energy policy goals and environmental policies for the maintenance and improvement of national air quality.

The 1977 Clean Air Act Amendments (CAAA) provided a comprehensive scheme for air quality management across the nation, covering areas where the air is currently cleaner than the levels set by the National Ambient Air Quality Standards (NAAQS) under the requirements for the Prevention of Significant Deterioration (PSD), and areas where the air is dirtier than the standards (nonattainment areas). Those sections of the Amendments, and subsequent EPA regulations, governing nonattainment areas have been a focus of particular interest to energy policy makers. The legislation required states to submit revised cleanup plans (State Implementation Plans or SIPs) outlining procedures for achieving the standards by December 31, 1982, with possible extensions to December 31, 1987, for carbon monoxide and oxidants. The deadline for submittal of the plans to EPA was set at January 1, 1979, with July 1, 1979, set as the deadline for an EPA-approved plan to be in effect. Severe sanctions -- a ban on the construction of new sources of emissions and a limit on federal funds for highway construction and sewage treatment plants -- were to be placed on any state failing to have a revised plan approved by the July 1 deadline.

Information on nonattainment areas -- for example, their location, the requirements for new sources being sited in or near such areas, the controls to be applied, and the degree of cleanup to be achieved by existing sources -- is important for an analysis of the interactions between energy

policy and air quality goals. Consequently, a project was begun in January 1979 to review all revised SIPs for nonattainment areas, to outline the causes and proposed cures, and to provide digitized maps of the subcounty areas designated as nonattainment by the states. The new source review procedures and the emission limitations for particulate matter (PM) and sulfur dioxide (SO_2) that apply to fuel combustion were summarized for each state. In order to provide additional background material for evaluating the extent of nonattainment and the possible constraints on energy development, maps have been prepared of the locations of monitors and of power plants. The maps are accompanied by information drawn from EPA and Federal Power Commission (FPC) data bases, such as the ambient concentrations recorded at specific monitors and the generating capacity of and fuel used by the utility plants.

This information was gathered for all 48 contiguous states, and is presented in Volumes 2 to 5 of this report, which are organized by Federal Region. For each state (placed in alphabetical order within the Federal Region) the following material is provided:

1 STATE TITLE PAGE

A summary of air quality data is presented to enable the reader to judge the general condition of a state at a glance. The summary lists the number of discrete (i.e., noncontiguous) nonattainment areas for each pollutant, the number of monitors with valid readings for a particular averaging time for a pollutant, and the number of monitors that recorded a violation of the standard. (Note that the monitors that have adequate data to be used for determining an annual average are a subset of the monitors that are valid for the 24-hour averages.) To complete the quick survey of a state, the numbers of fossil-fueled and nuclear power plants are included on the title page.

2 REVISED SIP OUTLINE

This brief examination of the contents of the revised SIP covers the sources of the problems, the proposed strategies for achieving attainment, and the new source review procedure the state intended to follow in the nonattainment areas. The version of the SIP used (e.g., draft or final and date) is indicated. The comprehensiveness of the coverage of these outlines varies, reflecting the version available when the report was prepared and the com-

pleteness of the documentation by the state. (In general, the states submitted revised plans in a piecemeal fashion, area-by-area and pollutant-by-pollutant.) The outlines attempt to draw the separate submissions into a comprehensible picture for the state as a whole.

Section I of the outline describes the sources of nonattainment in the state. Section II outlines the strategies the state proposed for attaining the standards. Since the report concentrates on those pollutants most likely to affect an energy policy directed at increased coal use, the strategies for attaining the SO_2, total suspended particulates (TSP), and nitrogen oxides (NO_x) standards are examined more closely than those for carbon monoxide (CO) and oxidant (O_x) standards.

SO_2 problems are usually the result of emissions from individual major point sources (frequently out of compliance with existing SIP requirements) and attainment strategies address cleaning up those particular sources. TSP problems are more frequently blamed on fugitive dust. The attainment strategies are often somewhat vague indications that possible controls will be examined and required, as appropriate. Most states requested the 18-month extension that was available for the submittal of a plan to attain the secondary TSP standard. EPA granted the extension, if the state had demonstrated that reasonably available control technology (RACT) was already required for all stationary point sources and that controls on fugitive process emissions and on nontraditional sources (such as road dust) would be necessary for attainment.

The attainment strategies for CO and O_x depend on the reduction of emissions from motor vehicles, through the projected effects of the Federal Motor Vehicle Emissions Control Program (FMVECP) combined with general estimates of vehicle turnover, i.e., rates of replacement of older vehicles. States requesting the statutory extension of the deadline for attainment to December 31, 1987, were required to include RACT on point sources (as specified in EPA's control techniques guidances for 11 stationary sources of volatile organic compounds or VOC), traffic control measures (as outlined in EPA's guidelines), and an inspection and maintenance program for motor vehicles.

Section III of the outline briefly describes the new source review a state planned to follow in nonattainment areas, noting in each case whether an

emission offset rule or a growth allowance would be used. Section IV lists the PM and SO_2 emission limitations required by the SIP for fuel combustion in existing sources. (Note that standards for ambient air quality are expressed in terms of TSP, whereas emissions limits on sources are expressed in terms of PM.)

3 MAPS OF NONATTAINMENT AREAS, AS DESIGNATED

In order to determine the areas for which revised SIPs would be needed, the 1977 Amendments to the Clean Air Act required a formal list of areas where the standards were being violated. The original designations were made in March 1978. A number of changes in the designations were made as additional air quality data became available. The maps in this report are based on designations as of May 1979.

Additional changes in the attainment status of a number of areas have been made since May 1979. The majority of the changes have occurred in the designations for the oxidant standard. As a result of EPA's revision of the standard, many areas could be redesignated as in attainment of the less stringent level. Few changes have been made in the CO nonattainment areas. The areas were already drawn to be quite small, often around a central business district. Minimal changes have been made since May 1979 in SO_2 nonattainment areas. Two areas in Ohio have become attainment (as noted in the outline) and New Mexico has drawn even smaller nonattainment areas around sources (in one case, a circle of one-mile radius). TSP areas have been subject to considerably more redesignation activity -- areas are drawn smaller; areas formerly exceeding the primary standard are proposed as exceeding only the secondary standards; areas that were violating the secondary standard are redesignated as attainment.

It is expected that this project will update the maps of nonattainment areas to reflect these changes. The areas currently shaded on the maps must still be viewed as potential problem areas. An area that has just become attainment or that is just outside the boundaries of a designated nonattainment area may still not be able to support new sources of emissions.

The absence of a map for a pollutant indicates either that the state was in attainment, or (in the case of oxidants only) that the entire state was designated as nonattainment. The title page for each state indicates pollu-

tant data that were not mapped. The nonattainment maps and other maps that follow them are numbered sequentially through this volume; these sequential numbers are preceded by a roman numeral identifying the Federal Region a given state is in.

4 SAROAD DATA

A computer print-out provides a listing of all the monitors within a state, with a number for each monitor, its latitude and longitude, and its recorded pollutant concentrations (in $\mu g/m^3$, or mg/m^3 for CO) based on 1975 data from EPA's Storage and Retrieval of Aerometric Data (SAROAD) system. The monitor readings were coded as follows:

Code	Reading (% of standard limit)
1	0-75
2	76-100
3	101-125
4	>125

Monitors that clearly had incorrect latitudes and longitudes (i.e., falling outside the state boundaries when mapped) were not plotted; they are indicated by an asterisk. The monitors were numbered sequentially in their order in the data base, and only monitors for the criteria pollutants were printed. Missing numbers in the sequence represent monitors for noncriteria pollutants.

5 SAROAD DATA MAPS

Monitors that were shown in the data base as having adequate data on a particular pollutant were mapped, with a shaded circle to indicate a monitor that recorded a violation of a particular standard (reading codes 3 and 4) and an unshaded circle to indicate a monitor that did not record a violation in 1975 (reading codes 1 and 2). Maps were provided for each pollutant and each averaging period of the NAAQS, and appear in the following order: 24-hour SO_2, annual average SO_2, 24-hour average TSP, annual average TSP, 8-hour average CO, 1-hour average O_x, and annual average NO_x. Pollutants or standard averaging periods for which a state had no valid monitor reading are not represented by monitor maps, and the absence of a map is noted on the title page for the state. A key map identifies each monitor by its unique number. Where monitors are clustered and their numbers cannot be read, the range of monitor numbers is indicated for reference to the monitor listing.

6 POWER PLANT DATA

On the basis of 1975 FPC data (as contained in EPA's Energy Data System), power plants within each state are listed and assigned a number. The printout contains the plant name, latitude and longitude, operating capacity, and convertible capacity as estimated by EPA's Strategies and Air Standards Division. Plants for which specific locations are not given in the data base or which have clearly incorrect latitude and longitude are noted as "not plotted." Information on fuel use for each plant is also provided, listing the amount of coal (1000 tons per year), oil (1000 barrels per year), and gas (1000×10^6 cubic feet per year) burned in 1975, and the average percentage of sulfur in the coal and oil. The absence of fuel use data indicates that the information for the particular installation was not available in the data base. In many cases, such a plant is a proposed or new facility which was not operating in 1975.

7 POWER PLANT MAPS

The power plants in each state are mapped according to the following scheme: a shaded square represents a fossil fuel-fired facility of 1000 MW capacity or more; an unshaded square, a fossil fuel-fired facility smaller than 1000 MW; and a triangle represents a nuclear facility. In addition, a key map identifies the power plants by location and number.

8 COUNTY MAPS

Finally, for general information, a map of each state showing county boundaries and county names is provided.

KEY SHEET

Summary Page

Number of noncontiguous nonattainment areas
Number of monitors in SAROAD for an average and a pollutant
Number of monitors with recorded violations of primary standard
Number of energy facilities

SIP Outline

I. Sources of Problem
II. Attainment Strategies
III. New Source Review
IV. Emission Limitations for Fuel Combustion

Maps of Nonattainment Areas (May, 1979)

Maps of areas as designated by states
Primary
Secondary
Attainment

SAROAD Data (1975)

Monitors numbered
Short-term Standard, second-highest reading
Annual Average, highest reading
Units, $\mu g/m^3$
Coding: (1) < 75% of the standard
(2) 75-100%
(3) 100-125%
(4) > 125%

SAROAD Maps

• Monitors recording violations in 1975
o Monitors not recording violations in 1975

Power Plant Data (1975)

Name of plant
Location
Operating capacity (MW)
Convertible capacity (MW)

Fuel Use Data (1975)

Name of plant
% sulfur in coal
Amount of coal (1000 tons per year)
Amount of oil (1000 barrels per year)
Amount of gas (1000 million cubic feet per year)

Power Plant Maps

■ Fossil-fueled facility > 1000 MW
□ Fossil-fueled facility < 1000 MW
△ Nuclear

Federal Region VIII
Covering the States of:

Colorado

Montana

North Dakota

South Dakota

Utah

Wyoming

REGION VIII: COLORADO

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	0[b]	0	8	0
	1 yr			5	0
TSP	24 hr	4	0	80	12
	1 yr			55	18
NO_x	1 yr	1	-	3	0
CO	8 hr	4	-	10	10
O_x	1 hr	1/4 of state	-	9	9

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	15
Nuclear	0
Total	15

COLORADO (Official SIP, 1/79)

I. SOURCES OF THE PROBLEMS

Colorado has five nonattainment areas for TSP: Colorado Springs, Denver, Grand Junction, Larimer-Weld and Pueblo. Mobile sources account for 25% (in Grand Junction) to 75% (Denver) of the problem. In Denver, the capital city, electric power generation is estimated to account for 10% of the TSP emissions, and construction activity accounts for the remaining 15%. In Pueblo, an industrial area south of Denver, at least 10% of the TSP emissions is estimated to result from the CF & I Steel Corp. plant; 30% from background "natural" sources; over 30% from vehicles and roads; and the remainder from area sources. In both Grand Junction and Larimer Weld, background fugitive dust is the primary source of PM emissions.

Denver has particular air quality problems as a result of unique topography (the proximity to the Rocky Mountains and high altitude). Denver is one of only three areas in the U.S. that are in nonattainment for NO_x -- emissions are mainly the result of large stationary sources (50%) and vehicles (40%).

Nonattainment for CO occurs in Colorado Springs, Denver, and Larimer-Weld as a result of auto emissions. Ozone nonattainment in Colorado Springs, Denver, and Larimer-Weld is also largely caused by mobile sources.

The adopted plans for the Colorado Springs area, the Denver region, and Larimer-Weld regions request extensions of the deadline for attainment for CO and ozone until after 1982. Primary TSP standards are predicted to be attained by the end of 1982 in all areas. The Denver region is expected to attain the NO_x standard by the end of 1982.

The SIP notes that the projected attainment of standards will probably not reduce the "brown cloud" that affects the Front Range urbanized areas of the state (i.e., those areas that are in the foothills of the Rocky Mts.) Measures to improve visibility and to reduce the haze will be the focus of future efforts of the Air Pollution Control Commission.

A. TSP

1. Colorado Springs

   a. Primary attainment by 1982 deadline, through:

      - modified street sanding in winter
      - construction site controls (to decrease the amount of mud and dirt carried off the site)
      - paving or stabilizing unpaved roads and alleys
      - control of grading and construction activities

   b. No additional controls on stationary sources

2. Denver

   a. Primary attainment by 1982

      - using all of above measures
      - plus street cleaning practices

   b. Control strategies will be studied first, to determine most effective mix

3. Grand Junction

   a. Primary attainment by 1982, through

      - all of the measures for Colorado Springs
      - and carpool program, bikeway system, and street cleaning

   b. Stationary sources not to be a target for control (2% of PM emissions)

4. Larimer-Weld

   a. Redesignations of attainment status

      - Fort Collins and Greeley will be redesignated from primary to secondary
      - the remaining areas will be redesignated as in attainment, on the basis of a rural fugitive dust exemption

   b. No further control strategies are necessary

5. Pueblo

   a. Redesignate the nonattainment area to a smaller area surrounding the core of the city

- control measures for transportation-related PM emissions (as outlined for Colorado Springs)

3. Denver Region may continue to violate ozone standard after 1987, unless additional control measures such as the following are adopted:

   - Modifying inspection and maintenance to apply to 1972 and later vehicles and possibly to 1968-71 vehicles
   - Incentives for purchasing low-polluting motor vehicles
   - Proposed "No Drive Day," initially voluntary with possible mandatory application in 1981

III. NEW SOURCE REVIEW

The EPA emissions offset policy is in effect and will continue to be used in nonattainment areas. Sources with emissions >100 tons per year are to be reviewed. Sources that are modified such that a significant change in emissions would result are also to be reviewed. "Significant" is defined as more than a 10% change. EPA has objected to this definition, noting that for a large source a change of less than 10% could result in a large enough amount of additional emissions to justify permit review. As of 11/79, however, this exemption is still part of Colorado's regulations.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Sources converting to coal from other fuels: 1.2 lb SO_2/MM Btu
2. Sources with heat input < 250 MM Btu/hr: 1.2 lb SO_2/MM Btu
3. Sources with heat input > 250 MM Btu/hr: 0.4 lb SO_2/MM Btu

B. TSP

1. Emission regulations for stationary sources of PM are not changed in the revised SIP

   a. Sources with heat input < 1 MM Btu/hr: 0.50 lb PM/MM Btu
   b. Sources with heat input > 500 MM Btu/hr: 0.1 lb PM/MM Btu
   c. Interpolate between the above limits for sources of intermediate size

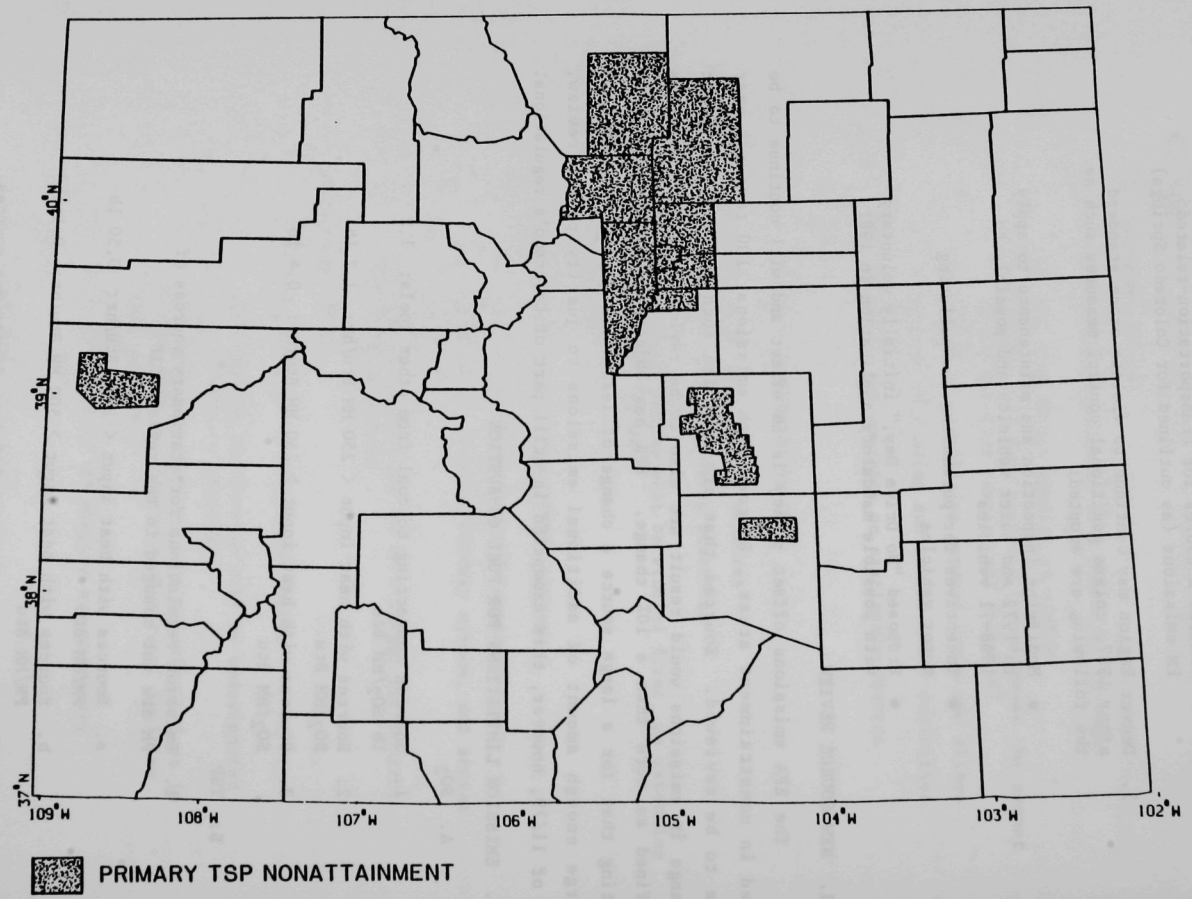


Fig. VIII.1. Colorado: TSP Nonattainment Areas as Designated May 1979

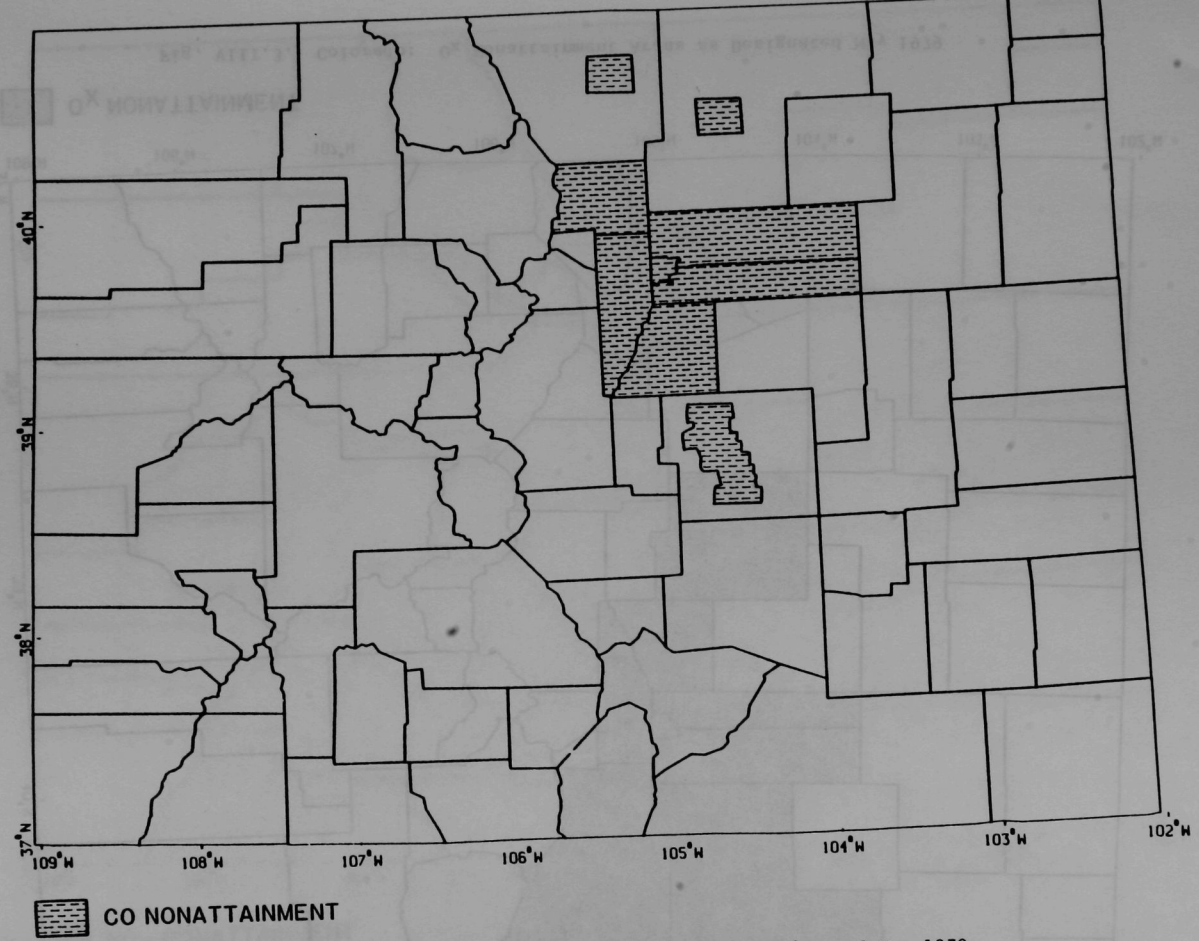


Fig. VIII.2. Colorado: CO Nonattainment Areas as Designated May 1979

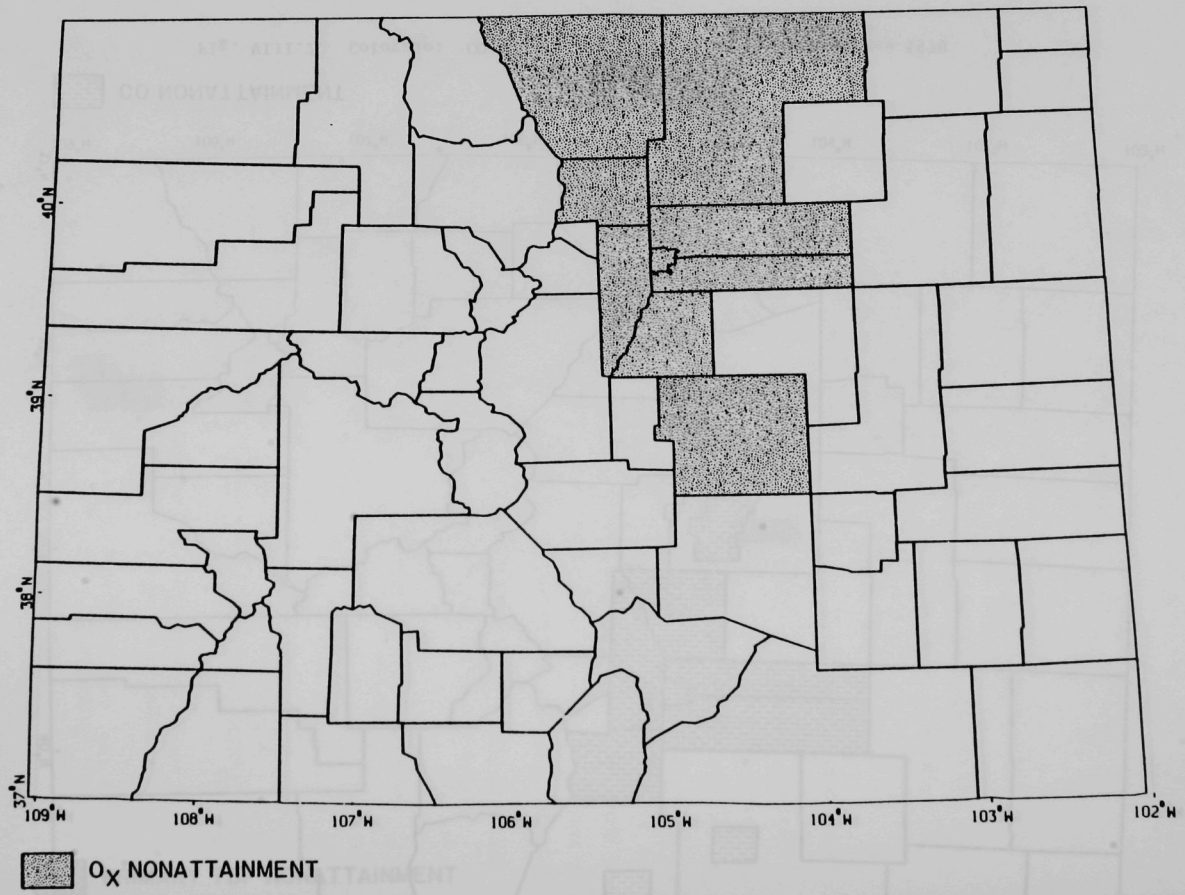


Fig. VIII.3. Colorado: O_x Nonattainment Areas as Designated May 1979

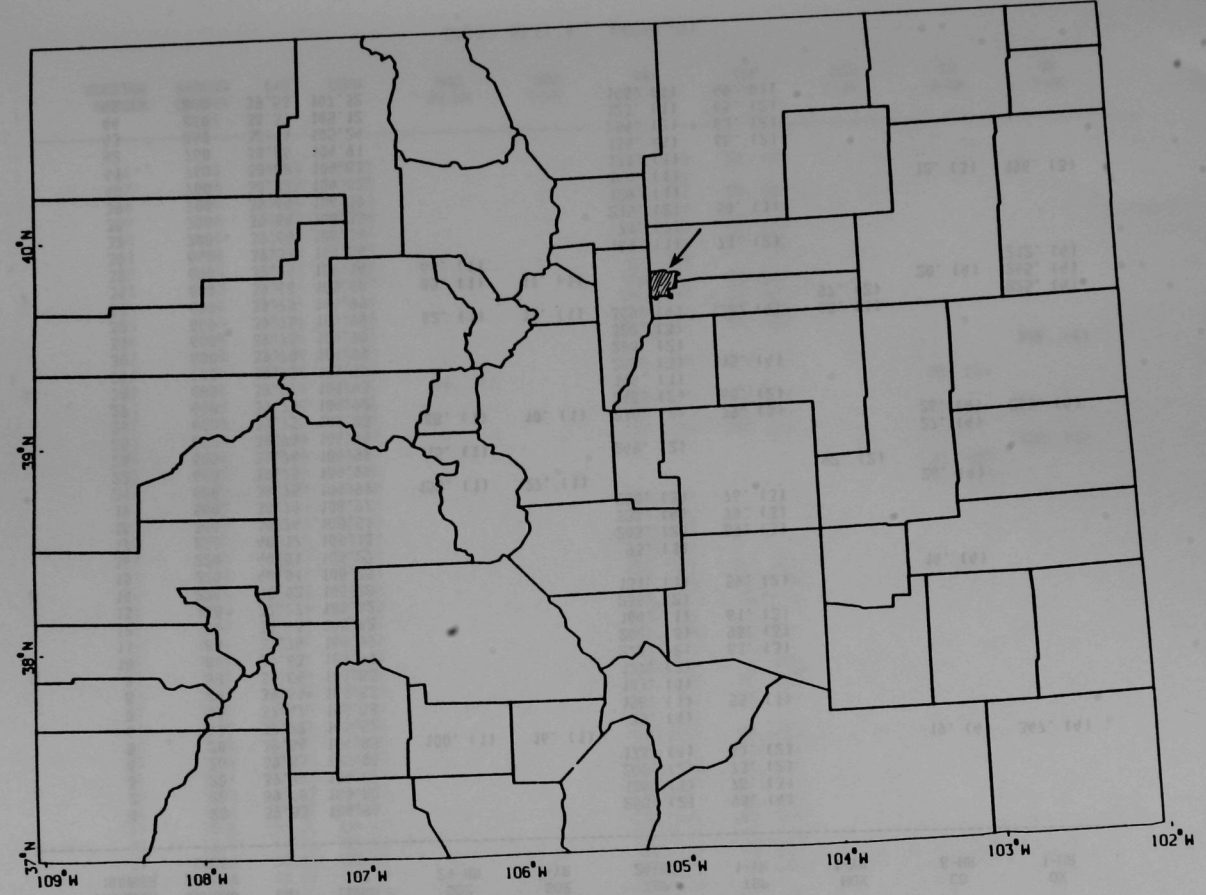


Fig. VIII.4. Colorado: NO_x Nonattainment Areas as Designated May 1979

Table VIII.1. Colorado: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	20	39.83	104.94			255. (2)	98. (4)			
2	20	39.99	104.82			186. (1)	78. (3)			
3	20	39.74	104.87			206. (2)	73. (2)			
4	20	39.83	105.04			173. (1)	61. (2)			
5	20	39.84	104.95	100. (1)	16. (1)				19. (4)	347. (4)
6	60	37.72	105.52			39. (1)				
7	60	37.47	105.88			158. (1)	55. (1)			
8	80	39.64	104.83			101. (1)				
9	80	39.64	104.83			127. (1)				
10	80	39.63	104.99			223. (2)	81. (3)			
11	80	39.74	104.99			262. (3)	93. (3)			
12	80	39.61	105.02			164. (1)	61. (2)			
13	100	37.27	107.02			236. (2)				
14	220	40.02	105.28			131. (1)	59. (2)			
15	220	40.01	105.25						14. (4)	
16	220	40.01	105.27			93. (1)				
17	220	40.17	105.10			203. (2)	89. (3)			
18	360	39.74	105.51			328. (4)	79. (3)			
19	560	38.74	108.07			280. (3)	76. (3)			
21	600	39.75	104.99	158. (1)	27. (1)				26. (4)	
22	600	39.75	104.99					92. (2)		
24	600	39.74	104.99	15. (1)		249. (2)				
25	600	39.74	104.94						27. (4)	
26	600	39.75	105.03	88. (1)	10. (1)	230. (2)	79. (3)		26. (4)	265. (4)
27	600	39.73	104.92			240. (2)	68. (2)			
28	600	39.77	104.93			144. (1)				
29	600	39.79	104.97			286. (3)	113. (4)			
30	600	39.70	104.99			200. (2)				
31	600	39.70	104.99			320. (3)				
32	600	39.75	104.99	62. (1)	17. (1)	369. (4)	122. (4)	60. (1)		
33	600	39.75	104.99					97. (2)		225. (4)
34	600	39.68	105.00	85. (1)	11. (1)				20. (4)	265. (4)
35	600	39.74	104.94	63. (1)						212. (4)
36	660	39.37	104.86			164. (1)	71. (2)			
37	700	39.64	106.34			71. (1)				
38	700	39.64	106.36			215. (2)	50. (1)			
39	700	39.64	106.39			129. (1)				
40	760	38.82	104.82			140. (1)			12. (3)	196. (3)
41	760	38.82	104.83			171. (1)				
42	760	38.86	104.91			134. (1)	66. (2)			
43	860	38.44	105.24			254. (2)	62. (2)			
44	860	38.39	105.12			123. (1)	65. (2)			
45	880	39.53	107.32			146. (1)	49. (1)			

Table VIII.1. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
46	880	39.45	108.05			180. (1)	53. (1)			
47	880	39.53	107.78			154. (1)				
48	960	40.06	106.40			157. (1)	59. (2)			
49	1040	38.87	106.98			268. (3)				
50	1040	38.55	106.93			166. (1)	49. (1)			
51	1080	37.62	104.78			149. (1)	61. (2)			
52	1120	40.73	106.28			51. (1)				
53	1140	39.71	105.11			186. (1)	60. (2)			
54	1140	39.89	105.19			146. (1)	45. (1)			
55	1140	39.76	105.22			170. (1)	61. (2)			
56	1140	39.75	105.06			227. (2)	71. (2)			349. (4)
57	1140	39.80	105.10							
58	1140	39.80	105.08			364. (4)	125. (4)		20. (4)	
59	1140	39.80	105.10	42. (1)						
61	1300	37.10	108.18			157. (1)	43. (1)			
62	1300	37.28	107.88			155. (1)	58. (2)			
63	1320	40.59	105.08			127. (1)	57. (2)			255. (4)
64	1320	40.48	104.99						21. (4)	
65	1320	40.57	105.08						11. (3)	
66	1320	40.59	105.08							
67	1320	40.63	105.14			108. (1)				
68	1320	40.38	105.52			64. (1)				
69	1320	40.40	105.07			110. (1)				
70	1360	37.17	104.51			125. (1)				
71	1440	40.62	103.21			251. (2)	65. (2)			
72	1520	37.31	108.41			197. (2)	45. (1)			
73	1520	39.16	108.73			177. (1)	53. (1)			
74	1520	39.07	108.56			153. (1)				
75	1560	40.51	107.55			310. (3)	80. (3)			
76	1600	37.34	108.60			53. (1)				
77	1600	37.20	108.49			30. (1)	7. (1)			
79	1600	38.09	108.45			116. (1)	13. (1)			
80	1640	38.48	107.83			165. (1)	60. (2)			
81	1660	40.26	103.62			76. (1)				
82	1700	37.99	103.54			152. (1)	49. (1)			
83	1700	38.05	103.72			136. (1)	64. (2)			
84	1780	39.19	106.82			179. (1)	26. (1)			
85	1800	38.09	102.61			232. (2)				
86	1840	33.27	104.61			260. (2)	105. (4)			
87	1840	38.25	104.61			274. (3)	104. (4)			
88	1860	40.04	107.91			127. (1)	47. (1)			
89	1860	39.84	108.39			68. (1)	13. (1)			
90	1860	40.09	108.79			172. (1)	43. (1)			
91	1920	40.49	106.83			280. (3)				
92	2220	40.48	104.90			124. (1)	56. (1)			

Table VIII.1. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
93	2220	40.34	104.91			213. (2)	83. (3)			
95	2220	40.46	104.87							235. (4)
96	2220	40.21	104.82			481. (4)	139. (4)			
97	2220	40.35	104.70			233. (2)	89. (3)			
99	2220	40.43	104.69			135. (1)	39. (1)			
100	2220	40.42	104.68			225. (2)	91. (3)			

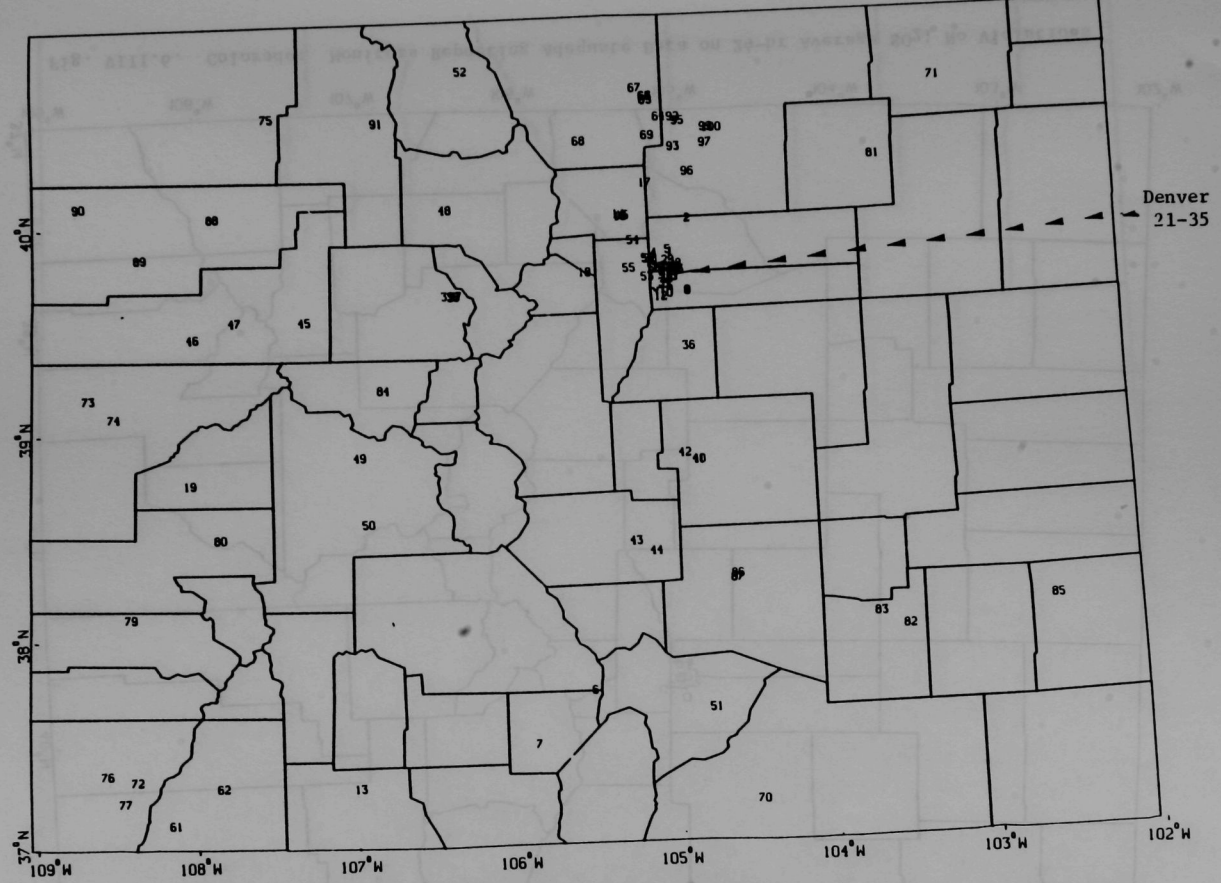


Fig. VIII.5. Colorado: Locations of SAROAD Monitors
(See Table VIII.1 for Monitor Numbers)

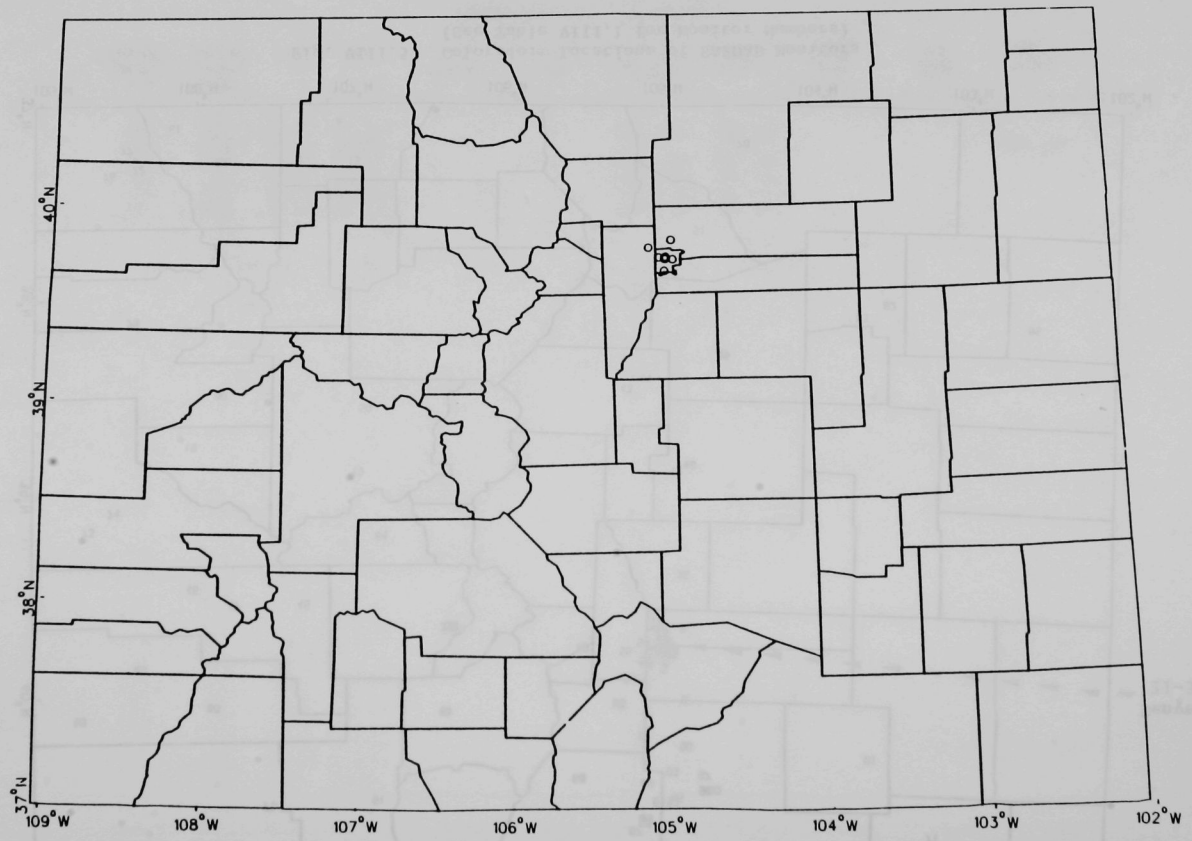


Fig. VIII.6. Colorado: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

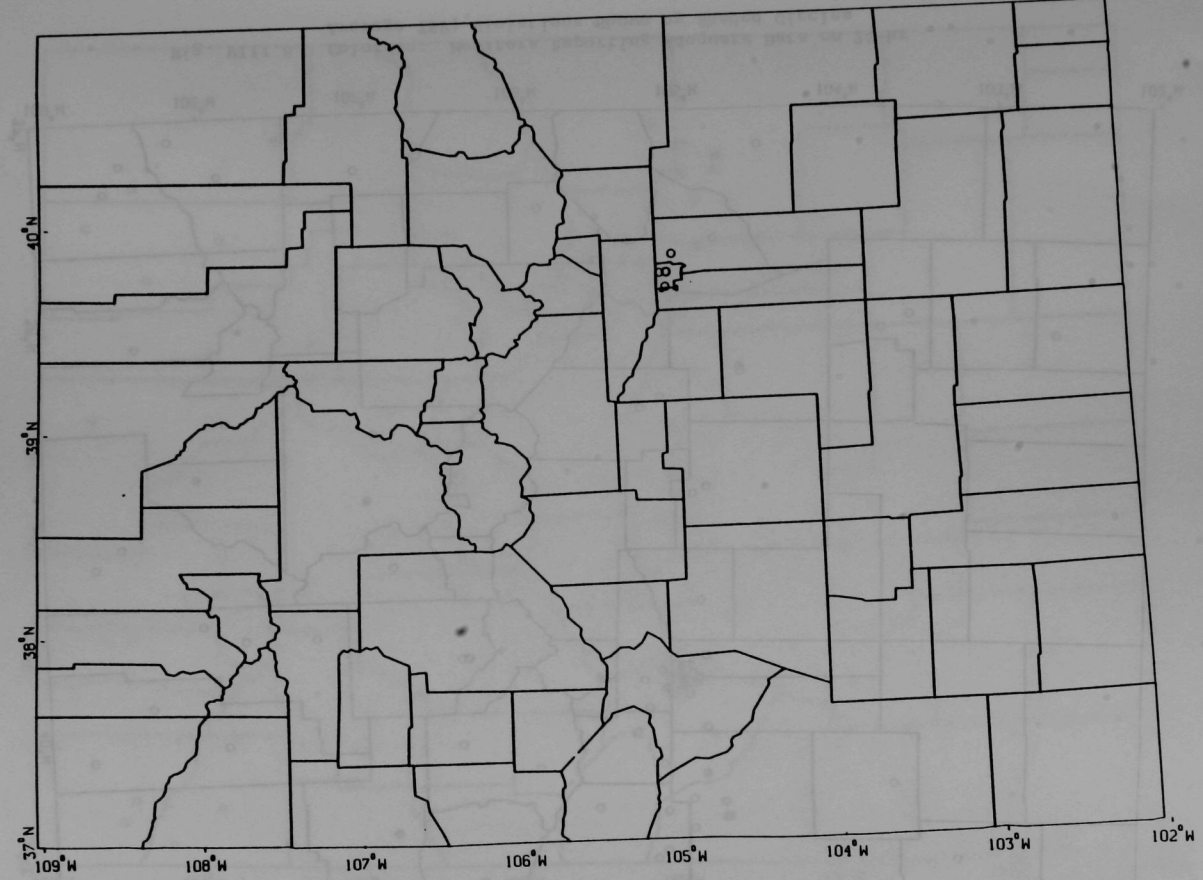


Fig. VIII.7. Colorado: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

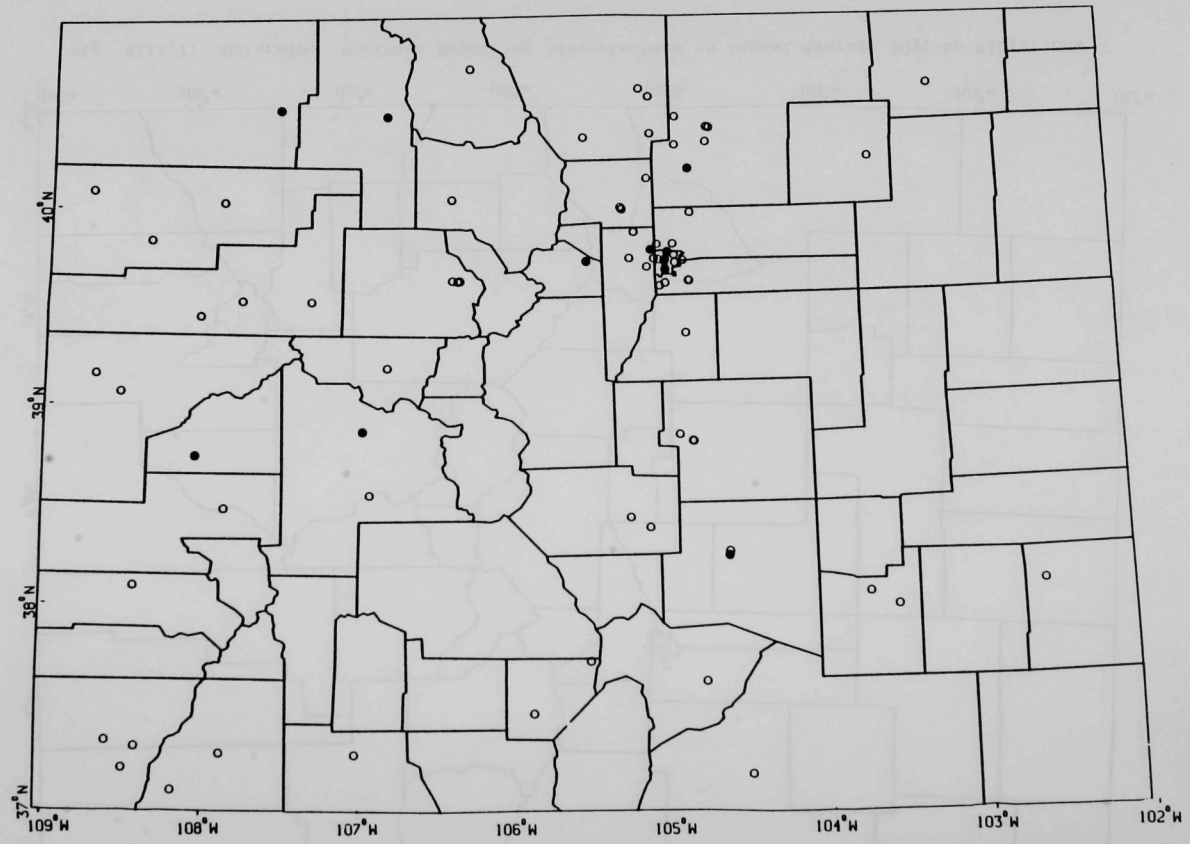


Fig. VIII.8. Colorado: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

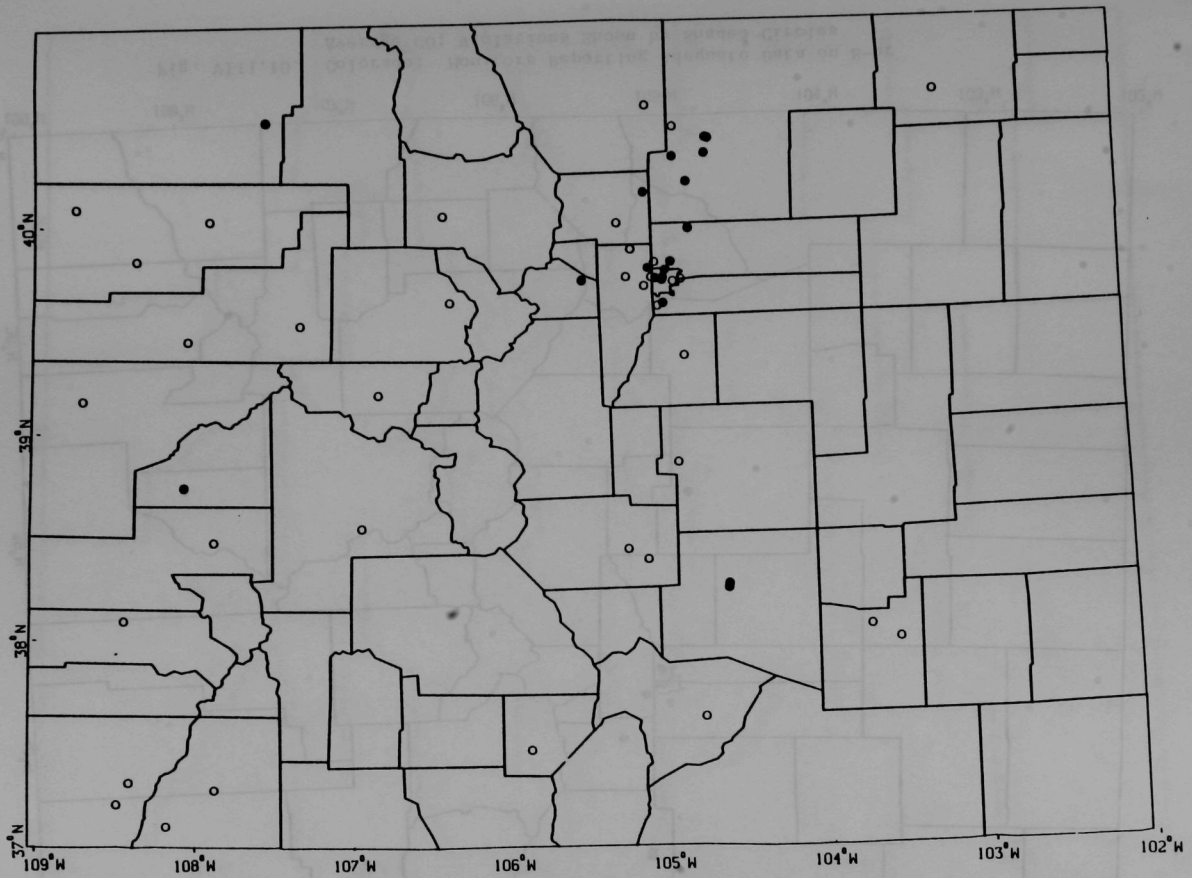


Fig. VIII.9. Colorado: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

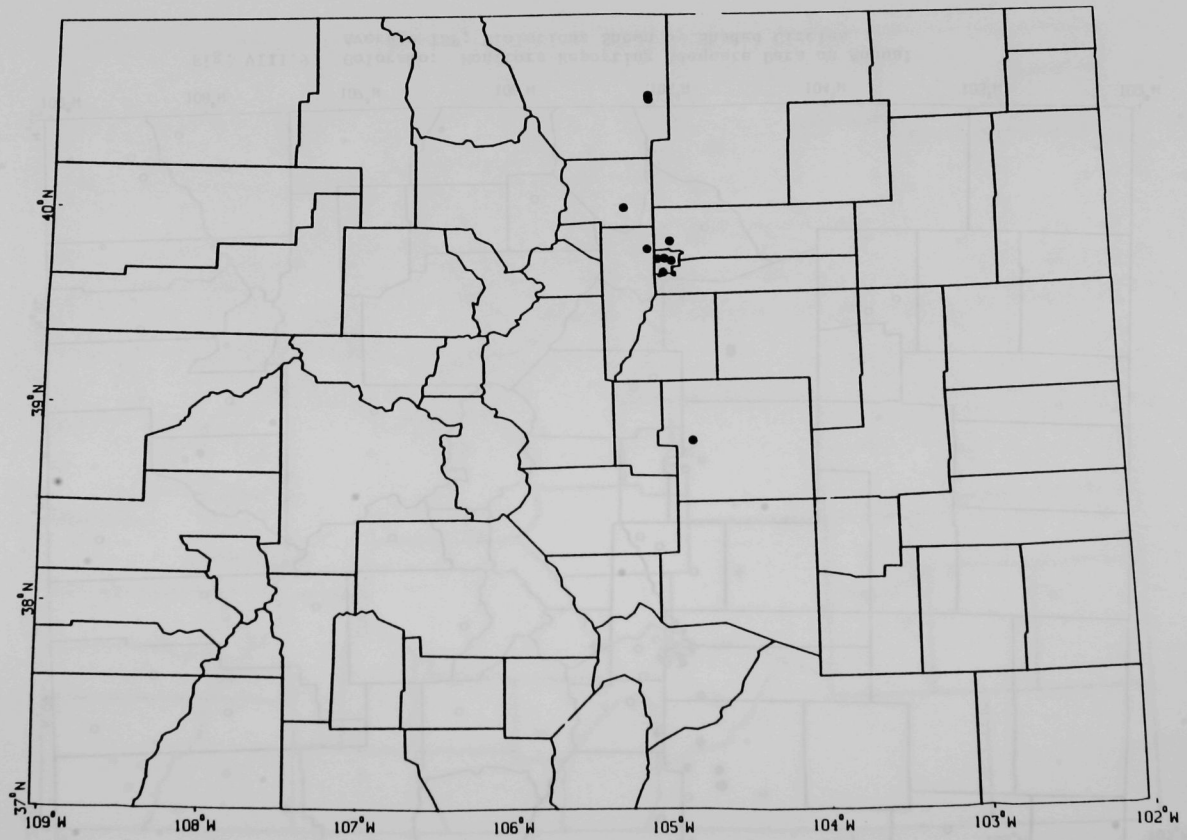


Fig. VIII.10. Colorado: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

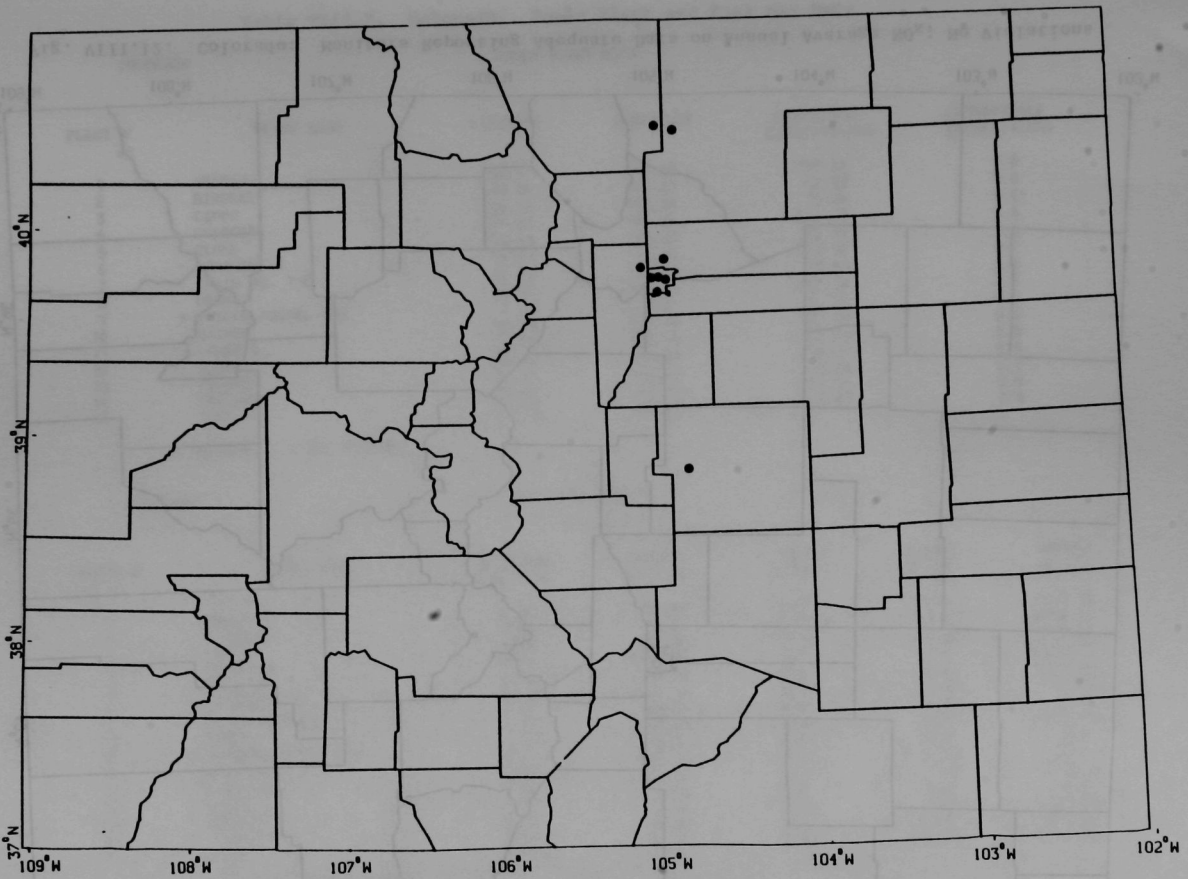


Fig. VIII.11. Colorado: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

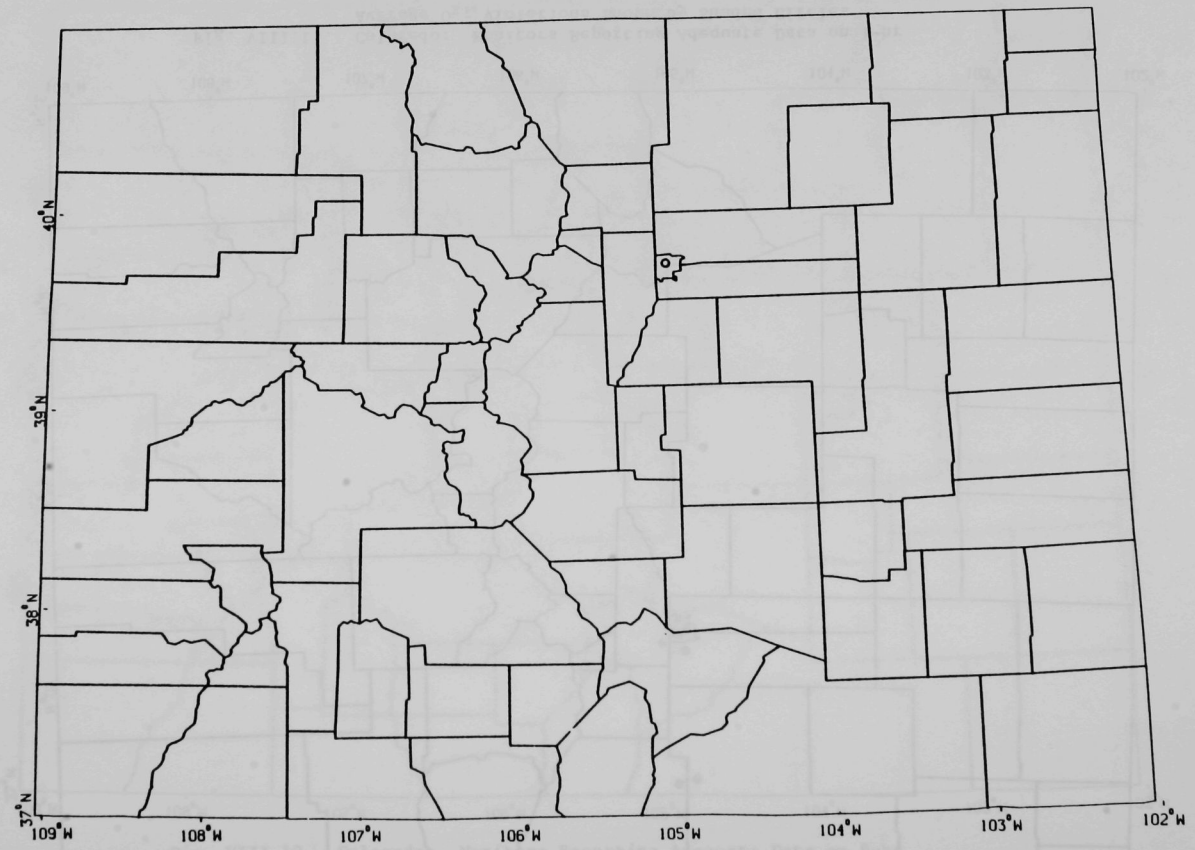


Fig. VIII.12. Colorado: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.2. Colorado: Power Plant and Fuel Use Data

COLORADO

POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	ARAPAHOE	39.67	105.00	250.50	0.0
2	BIRDSALL	33.88	104.81	52.00	0.0
3	CANEO	39.15	108.32	75.00	0.0
4	CHEROKEE	39.81	104.96	801.30	0.0
5	CLARK	38.43	105.25	33.50	0.0
6	COMANCHE 1	38.21	104.58	778.50	0.0
7	CRAIG NO. 1-2	40.53	107.53	18.00	0.0
8	DRAKE	38.82	104.83	282.30	0.0
9	* FUTURE FOSSIL STA.	0.0	0.0	51.30	0.0
10	HAYDEN	40.49	107.19	163.20	0.0
11	LAMAR 6	37.95	102.40	25.00	0.0
12	NUCLA	38.24	108.51	34.50	0.0
13	PUEBLO	38.27	104.61	30.00	0.0
14	VALMONT	40.02	105.19	231.75	0.0
15	ZUNI	39.74	105.02	115.25	0.0

N NUCLEAR * NOT PLOTTED

COLORADO

FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	ARAPAHOE	0.54	654.10	0.0	0.0	7065.10
2	BIRDSALL	0.0	0.0	0.63	3.80	1992.20
3	CANEO	0.68	176.36	0.19	0.21	2382.65
4	CHEROKEE	0.49	2151.15	0.0	0.0	12131.89
5	CLARK	0.70	99.70	0.0	0.0	1951.20
6	COMANCHE 1	0.42	1218.36	0.29	33.95	35.75
7	CRAIG NO. 1-2	0.0	0.0	0.0	0.0	0.0
8	DRAKE	0.77	441.60	0.0	0.0	4454.30
9	* FUTURE FOSSIL STA.	0.0	0.0	0.0	0.0	0.0
10	HAYDEN	0.45	648.10	0.20	0.54	0.0
11	LAMAR 6	0.0	0.0	0.20	3.51	1093.43
12	NUCLA	0.70	202.10	0.0	0.0	0.0
13	PUEBLO	0.0	0.0	0.30	5.10	2281.80
14	VALMONT	0.82	179.81	0.0	0.0	7365.70
15	ZUNI	0.0	0.0	0.96	676.38	6903.48

N NUCLEAR * NOT PLOTTED

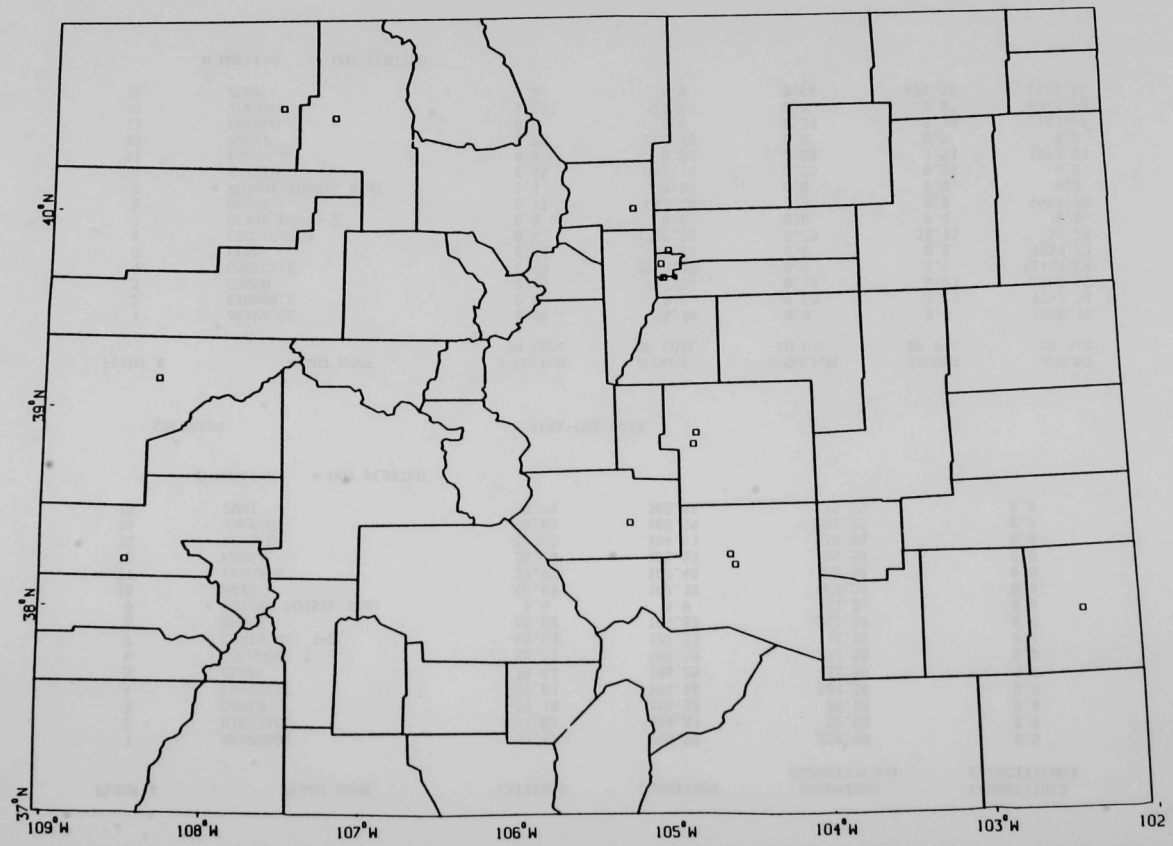


Fig. VIII 13. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

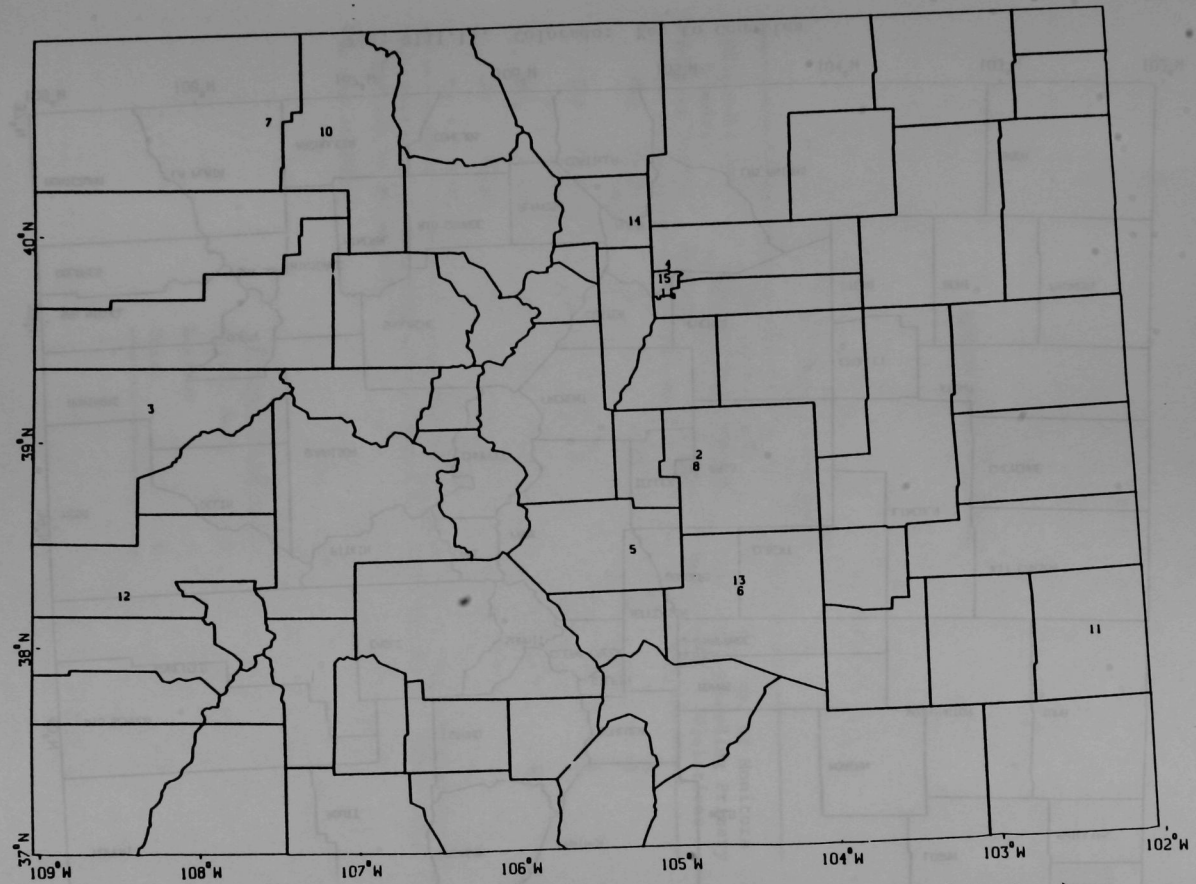


Fig. VIII.14. Power Plant Key (See Table VIII.2 for Identification and Fuel Use Data)

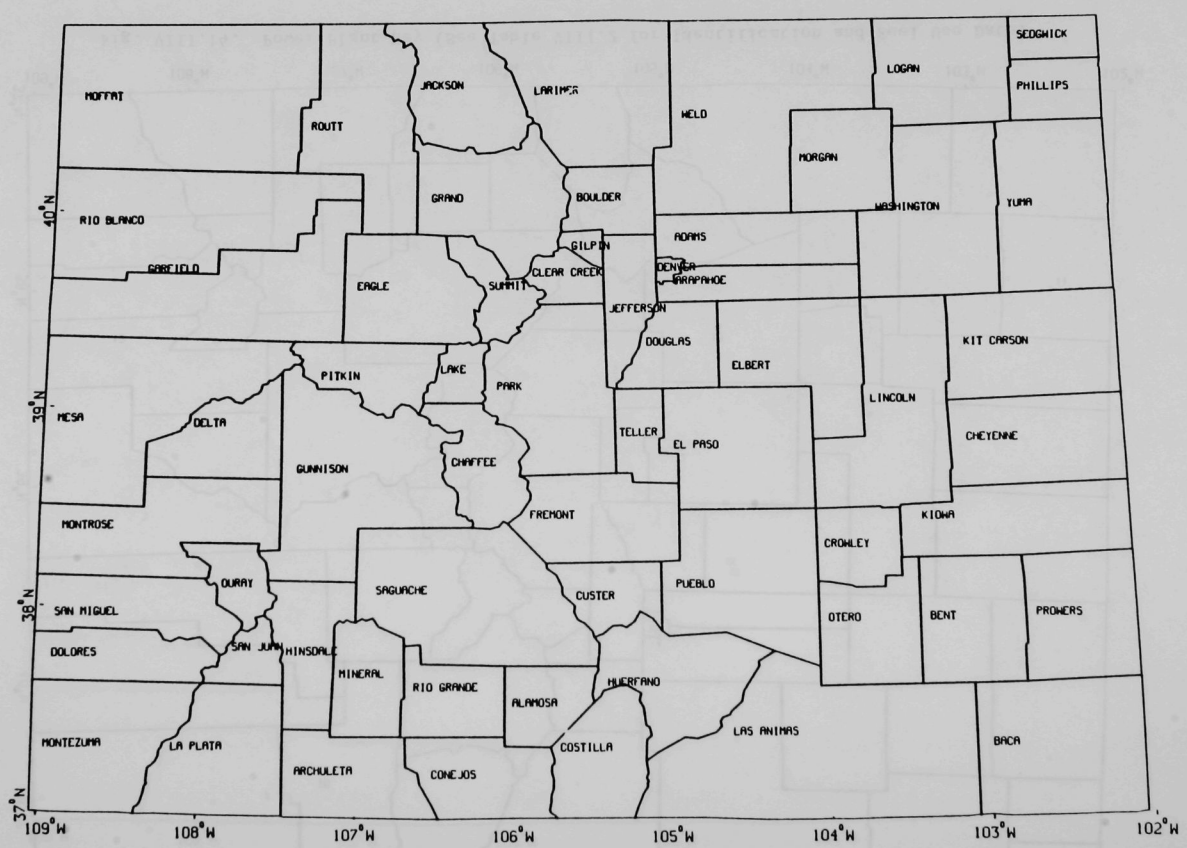


Fig. VIII.15. Colorado: Key to Counties

REGION VIII: MONTANA

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	3	0	40	4
	1 yr			12	0
TSP	24 hr	4	4	53	2
	1 yr			18	1
NO_x	1 yr	0[b]	-	1	0
CO	8 hr	2	-	4	2
O_x	1 hr	1	-	6	2

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	4
Nuclear	0
Total	4

MONTANA (Official SIP, 3/79)

I. SOURCES OF THE PROBLEM

Montana has designated three areas as nonattainment for SO_2 -- East Helena (Lewis & Clark Co.), Anaconda (Deer Lodge Co.), and Laurel (Yellowstone Co., near Billings). The Billings area is proposed as unclassified, although the SIP notes that violations are predicted by modeling to occur near major industrial sources. In the absence of monitoring data, however, a nonattainment designation was not considered to be appropriate. The SO_2 nonattainment areas center around large point sources: the Anaconda copper smelter, the ASARCO smelter in East Helena, and the Farmers Union Central Exchange (CENEX) refinery in Laurel.

Four areas are designated nonattainment for the primary TSP standard -- the town of Colstrip (Rosebud Co.); Columbia Falls (Flathead Co.); an area in Missoula (Missoula Co.); and an area in Butte (Silver Bow Co.). In addition, there are secondary violations recorded in Billings (Yellowstone Co.), Great Falls (Cascade Co.), East Helena (Lewis & Clark Co.), and a portion of Missoula. The Colstrip area violations are due to coal mines, unpaved roads, and construction, rather than to the emissions from two power plants in Colstrip. A monitor placed on a hill above the mining area (designed to reflect the power plant emissions rather than low-level sources) showed no violations. The primary nonattainment in Columbia Falls is largely due to fugitive dust (94%), with combustion and industrial processes each accounting for 3%. Missoula has both primary and secondary nonattainment areas. Unpaved roads account for 55% of the particulates, whereas four wood-product companies contribute 25%. In addition, fuel combustion and wood-burning fireplaces each account for about 4%. Butte's primary nonattainment is a result of emissions from Berkeley Pit Copper Mines (68%). Road dust on paved and unpaved streets contributes approximately 20%. Downtown Billings is a secondary nonattainment area with 60% of the particulates from reentrained dust on paved roads and 2% due to highway vehicles. In East Helena -- in nonattainment for secondary standards -- construction activities were determined to be the major source of fugitive dust, and industrial fugitive dust was responsible for 65% of the total particulate emissions. In addition, an industrial slag heap from an ASARCO plant adds 16% to the particulate load. In Great Falls, the TSP problems result from vehicles.

Montana has designated the downtown areas of Billings and Missoula as in nonattainment for CO, as a result of emissions from motor vehicles. Yellowstone County was designated as in nonattainment for O_x by the EPA, although the state proposed the area as unclassified.

II. ATTAINMENT STRATEGIES

A. SO_2

1. General strategy for SO_2 control is state regulation limiting sulfur in fuel to 1.0 lb sulfur/MM Btu

2. Anaconda

   a. Compliance with SIP emission limitations

   b. Limits require 86% control of sulfur input to smelter

   c. Additional acid plant capacity will have to be constructed for the smelter

   d. Modifications to reduce fugitive SO_2 emissions, including a compliance schedule

3. East Helena (ASARCO)

   - 80 tons per day of SO_2 from sinter plant
   - 23 tons per day of SO_2 from blast furnace

   a. Plant will need 75% control of sulfur input to smelter

   b. Raising stack for blast furnace to levels consistent with good engineering practice

4. Laurel (CENEX refinery)

   a. Part of a control strategy for the Billings area and other point sources of SO_2

   b. Clarification of the problem, with the possibility of the following additional steps to be taken:

      - new emission limitations
      - stack heights consistent with good engineering practice
      - SO_2 ambient monitoring program
      - source monitoring and reporting

B. TSP

1. The state has issued a new regulation on airborne particulates

2. Billings

   a. Secondary violation is caused by road dust

   b. Control reentrainment of the dust by motor by vehicles

      - vacuum sweeping
      - street flushing
      - discontinuing the use of cinders for de-icing

3. Butte

   a. Control of fugitive emissions from Berkely Pit

   b. Control of dust from paved and unpaved roads

4. Colstrip

   a. Mining activities are responsible for 60% of emissions; nonmining (including power plants) 40%

   b. New particulate rule to require permits for existing mining companies in nonattainment areas

      - emissions standards and controls could be required
      - permit approval would be needed before mining operations could continue
      - permits to be approved by 1/1/81

   c. Controls on mining could include

      - covering coal stockpiles
      - controling haul-road speed
      - watering roads to suppress dust
      - revegetating open areas
      - chemical stabilization of waste piles

   d. Reduce fugitive dust in town of Colstrip

      - clean paved streets
      - water alleys
      - pave streets
      - enforce speed limits on unpaved roads

5. Columbia Falls

   a. Rebuild major highway

   b. Clean roads

c. Add curbs and gutters

d. Sweep streets

6. East Helena

a. End of construction project should bring attainment

b. ASARCO to spray slag piles for fugitive dust control

7. Great Falls

a. Downtown area is in nonattainment

b. Reduce fugitive dust from roads

- street sweeping
- street flushing

8. Missoula

a. The existing emission limitation on point sources is adequate

b. The major sources are nontraditional

- clean streets
- pave streets
- pave roads and parking areas in all new construction
- reduce fireplace emissions by a public education program

C. CO

1. Billings

a. The problem is mainly "hot spots" at intersections

b. Make changes in traffic flow to eliminate hot spots

c. FMVECP

2. Missoula

a. FMVECP

D. O_x

1. Yellowstone County

2. No strategy

a. Only one monitor reading exceeded new standard of 0.12 ppm, which the state maintains was due to atmospheric conditions (electric storm); therefore, the area is in attainment

III. NEW SOURCE REVIEW

Permits are required for sources emitting 25 tons per year (potential emissions) and above. No offset program has been devised, and state officials see it as a possibility but probably inappropriate. The only point sources emitting SO_2 are smelters, TSP being primarily a result of fugitive dust. The state has added a regulation requiring sources subject to a permit review to also be examined for emissions of airborne particulate matter. This particulate matter is defined as emission for which a source test can be performed but which is not from a stack or chimney. Existing sources are to use RACT, new sources with less than 100 tons per year of potential emissions are to use BACT; new sources with potential emissions greater than 100 tons per year will use LAER. In addition, the regulation states that no person can authorize activities (such as parking lots and construction sites) that could lead to airborne particulate matter, without taking "reasonable precautions" to control such emissions.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. The statewide limit on sulfur content of fuel is 1 lb S/MM Btu

B. TSP

1. Existing sources

a. With heat input $\leq$ 10 MM Btu/hr: 0.6 lb PM/MM Btu

b. With heat input > 10,000 MM Btu/hr: 0.19 lb PM/MM Btu

c. Interpolate between the above limits for sources of intermediate size

2. New sources

a. With heat input $\leq$ 10 MM Btu/hr: 0.60 lb PM/MM Btu

b. With heat input $\geq$ 10,000 MM Btu/hr: 0.12 lb PM/MM Btu

c. Interpolate between the above limits for sources of intermediate size

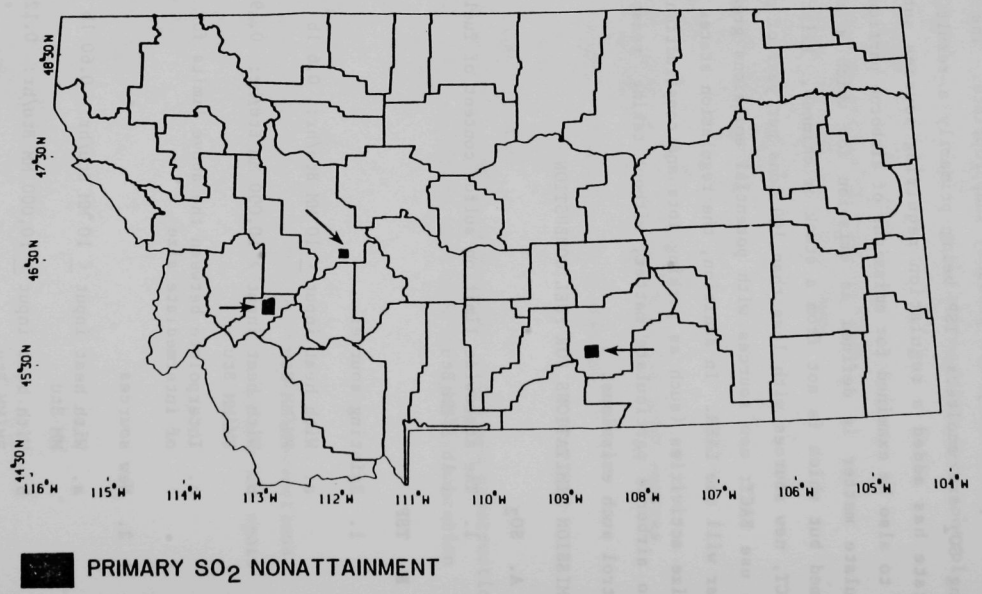


Fig. VIII.16. Montana: SO_2 Nonattainment Areas as Designated May 1979

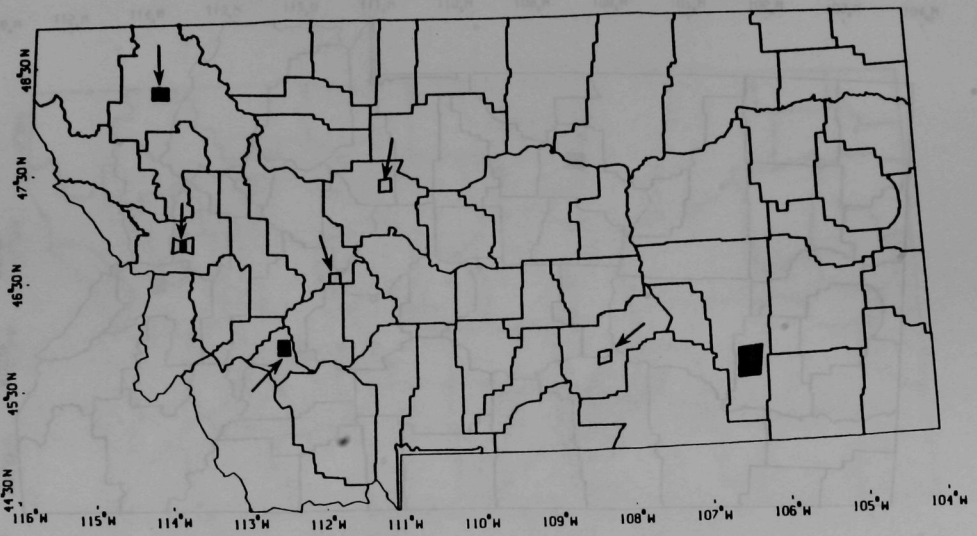


Fig. VIII.17. Montana: TSP Nonattainment Areas as Designated May 1979

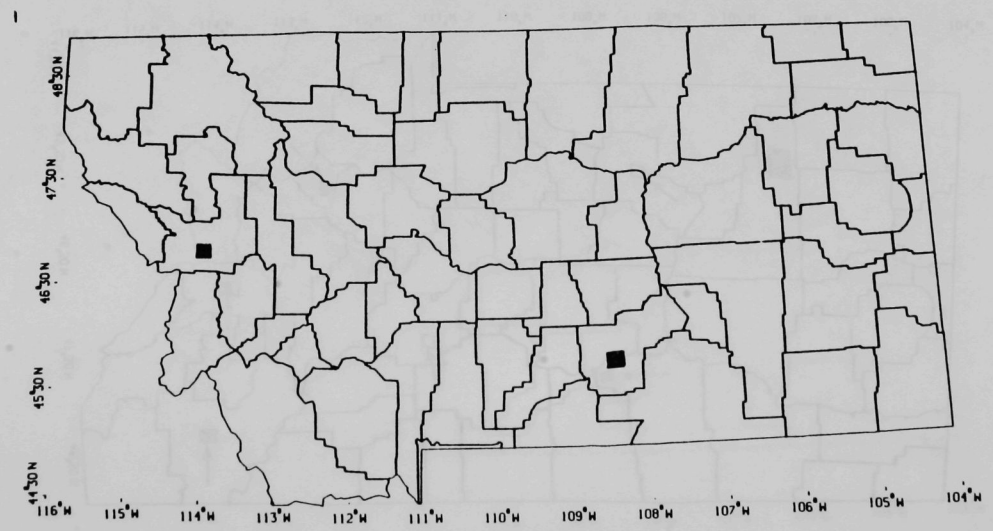


Fig. VIII.18. Montana: CO Nonattainment Areas as Designated May 1979

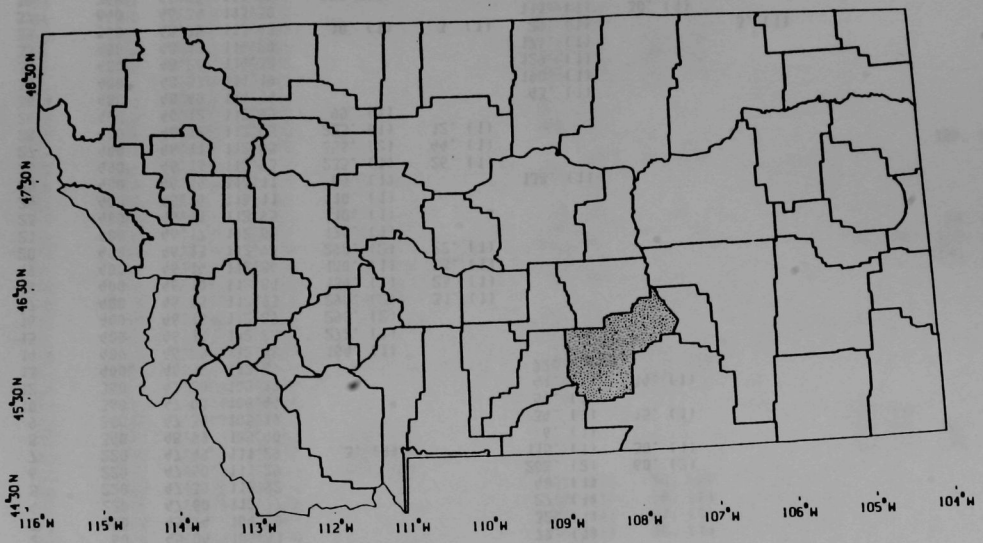


Fig. VIII.19. Montana: O_X Nonattainment Areas as Designated May 1979

Table VIII.3. Montana: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	60	45.66	107.60			6. (1)				
2	60	45.04	106.81			77. (1)				
3	200	45.74	104.50			32. (1)				
4	220	47.00	110.77			27. (1)				
5	220	47.39	110.92			40. (1)				
6	220	47.50	111.29			208. (2)	60. (2)			
7	220	47.49	111.29	3. (1)		115. (1)	30. (1)			
8	340	48.99	105.40			6. (1)				
9	360	47.30	105.19			34. (1)	15. (1)			
10	360	47.01	104.44			59. (1)				
12	360	47.30	105.19			41. (1)	14. (1)			
13	400	46.14	112.89			77. (1)				
14	400	46.20	112.88	164. (1)						
15	400	46.11	112.88	272. (1)						
16	400	46.14	112.89	290. (2)						
17	400	46.08	112.93	290. (2)	31. (1)					
18	400	46.10	112.84	134. (1)	23. (1)					
19	400	46.14	112.86	180. (1)	28. (1)					
20	400	46.13	112.95	290. (2)	22. (1)					
21	400	46.17	112.83	175. (1)						
23	400	46.11	112.95	110. (1)						
24	400	46.14	113.11	110. (1)						
25	400	46.14	113.11	64. (1)		138. (1)				
26	400	46.13	112.93	235. (1)	26. (1)					
27	400	46.11	112.95	356. (2)	44. (1)					
28	400	46.12	112.95	223. (1)	12. (1)					
29	400	46.12	112.95	99. (1)						
30 *	480	48.40	144.14			43. (1)				
31	480	48.37	114.19			190. (1)				
32	480	48.20	114.32			129. (1)				
33	480	48.19	114.29			174. (1)				
35	560	48.75	113.43	10. (1)	3. (1)	29. (1)		3. (1)		
37	640	46.34	113.30			111. (1)	30. (1)			
38	760	46.55	111.92	572. (4)	40. (1)	34. (1)				
39	760	46.55	111.92	263. (1)		44. (1)				
40	760	46.52	111.92	1057. (4)	38. (1)					
41	760	46.52	111.92	816. (4)						
42	760	46.56	111.87	419. (3)						
43	860	46.58	112.00	232. (1)						
44	860	46.58	111.89	122. (1)						
45	860	46.58	112.01			69. (1)				
46	860	46.58	112.01	81. (1)						
47	860	46.59	111.92			223. (2)				

Table VIII.3. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
50	860	46.58	112.01	35. (1)		161. (1)	63. (2)			
51	940	48.38	115.54			26. (1)				
52	980	47.93	106.31	29. (1)		213. (2)	68. (2)			
53	1100	46.87	113.99	3. (1)		178. (1)				
54	1100	47.00	114.20			353. (4)				
55	1100	46.85	114.09			196. (2)	44. (1)			
56	1100	46.88	113.89			130. (1)	37. (1)			
57	1100	46.92	114.08			47. (1)	12. (1)			
60	1240	45.29	105.49			44. (1)				
61	1240	45.30	106.16			177. (1)				
62	1260	46.52	112.80			102. (1)				
63	1260	46.52	112.80							129. (2)
64	1340	29.56	105.50			71. (1)	16. (1)			
65	1340	48.03	105.28			109. (1)				
66	1360	45.86	106.58	6. (1)		47. (1)				
67	1360	45.59	106.27			31. (1)				
69	1360	45.55	106.51	33. (1)		19. (1)				78. (1)
70	1360	45.76	106.39	3. (1)		49. (1)			0. (1)	155. (2)
71	1360	45.76	106.39	5. (1)		67. (1)				1313. (4)
72	1360	45.86	106.58	3. (1)		62. (1)				
74	1480	46.00	112.45							
75	1480	46.03	112.75	21. (1)		95. (1)				
76	1480	46.00	112.68			36. (1)				
77	1480	45.99	112.52			97. (1)				
78	1480	46.00	112.48			160. (1)	43. (1)			
79	1480	46.02	112.54			331. (4)	100. (4)			
80	1480	46.00	112.50			96. (1)				
81	1480	45.99	112.48						5. (1)	
82	1720	45.77	108.50						14. (4)	157. (2)
83	1720	45.78	108.51	67. (1)					12. (3)	298. (4)
84	1720	45.78	108.52	92. (1)						
85	1720	45.81	108.41	311. (2)						
86	1720	45.55	108.55			147. (1)	58. (2)			
87	1720	45.79	108.50			152. (1)	59. (2)			
88	1720	45.73	108.61			68. (1)	27. (1)			
89	1720	45.80	108.44			110. (1)	36. (1)			
90	1720	45.80	108.44	150. (1)						
91	1720	45.66	108.75	225. (1)	51. (1)					
92	1720	45.66	108.74	182. (1)	29. (1)					
93	1720	45.67	108.77			79. (1)	32. (1)			

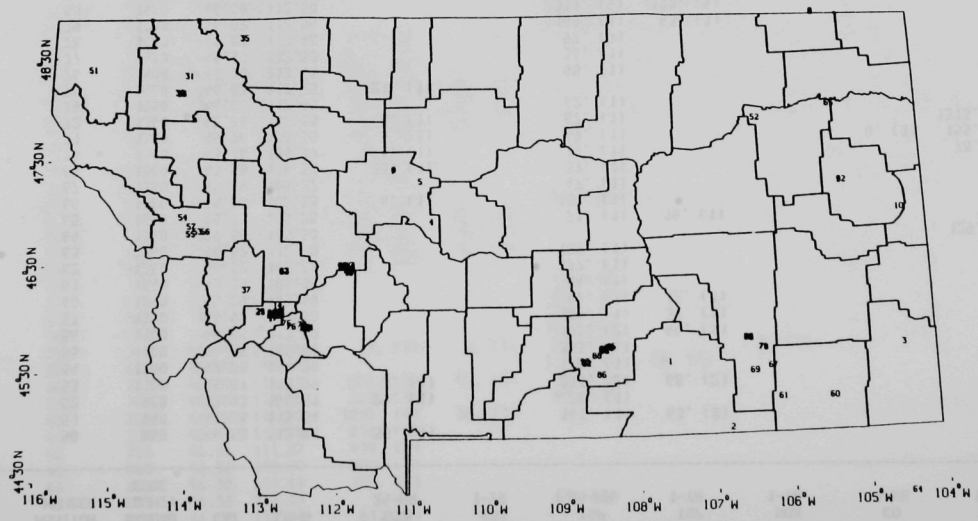


Fig. VIII.20. Montana: Locations of SAROAD Monitors
(See Table VIII.3 for Monitor Numbers)

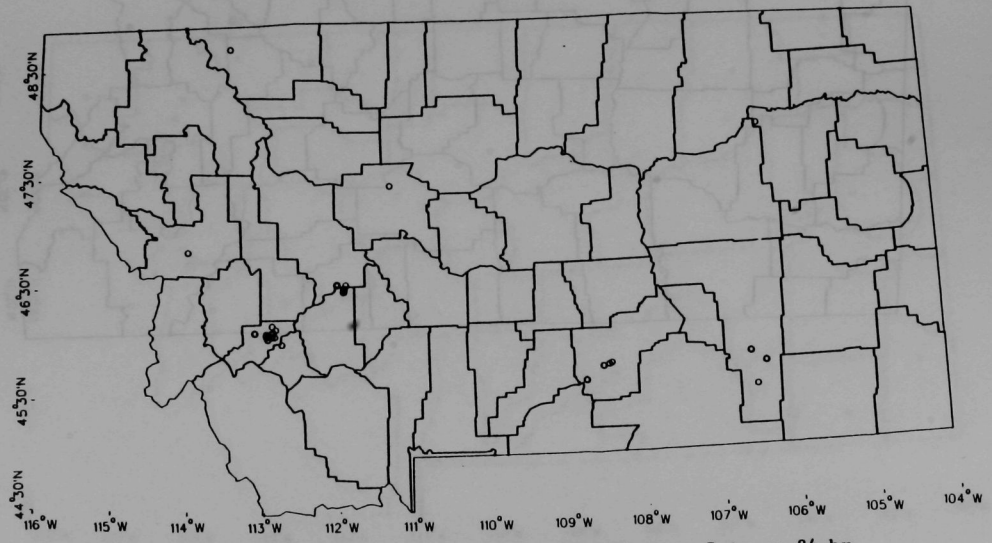


Fig. VIII.21. Montana: Monitors Reporting Adequate Data on 24-hr Average SO_2; Violations Shown by Shaded Circles

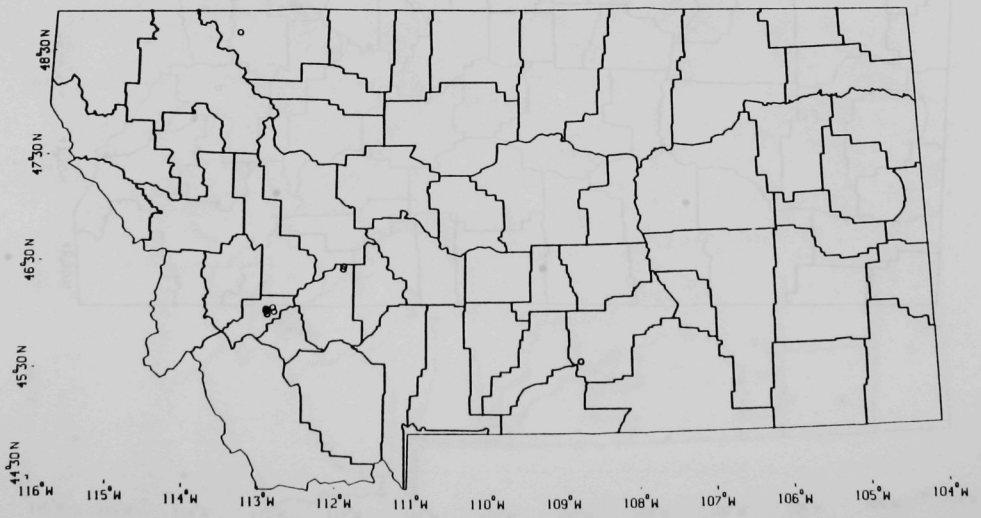


Fig. VIII.22. Montana: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

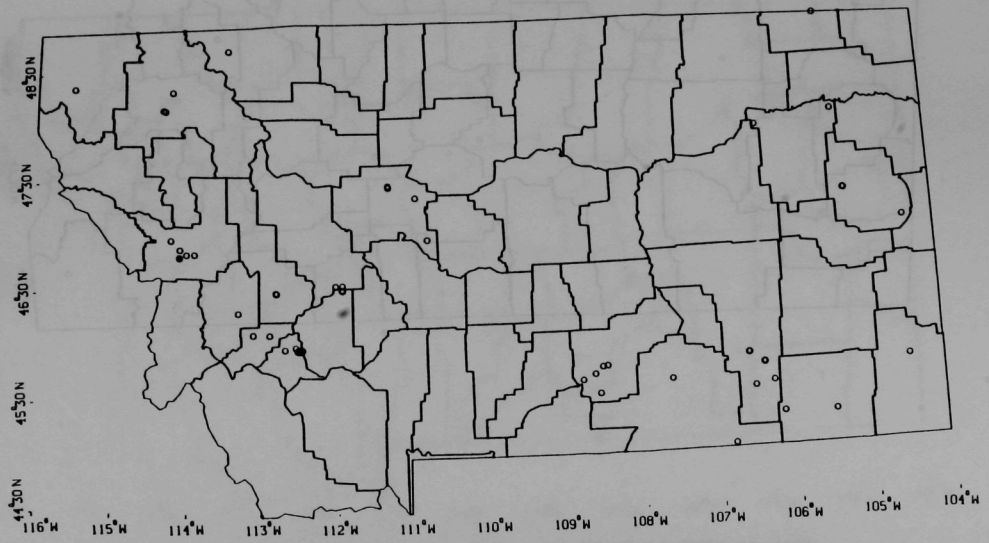


Fig. VIII.23. Montana: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

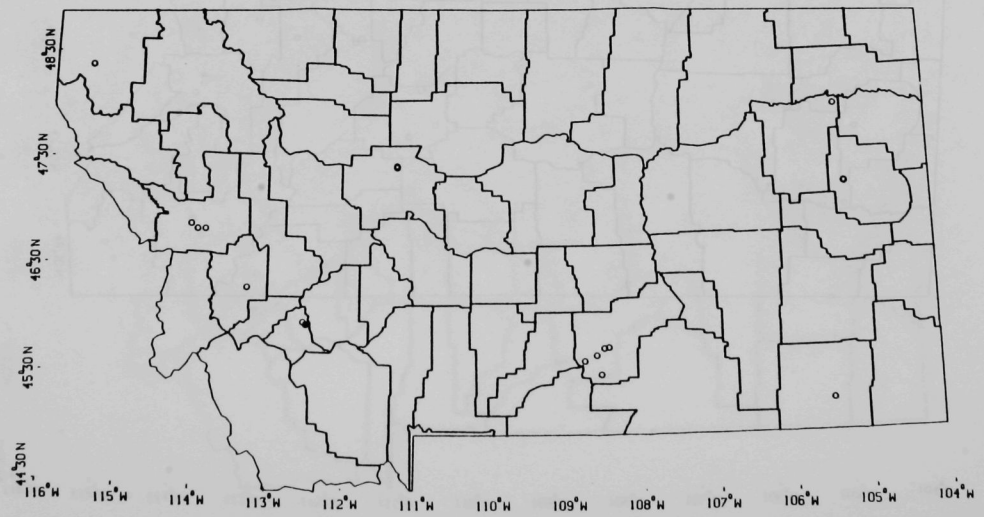


Fig. VIII.24. Montana: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

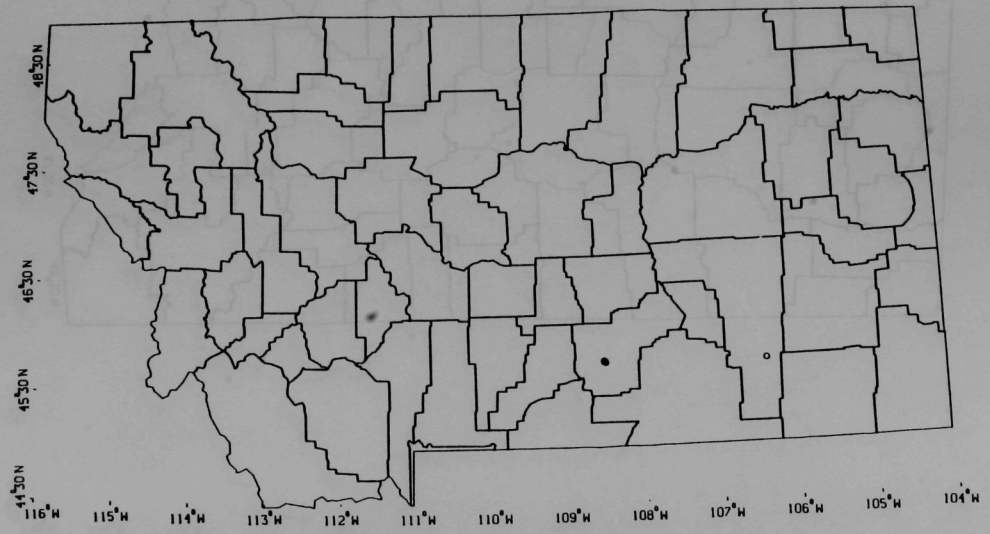


Fig. VIII.25. Montana: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

Fig. VIII.26. Montana: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

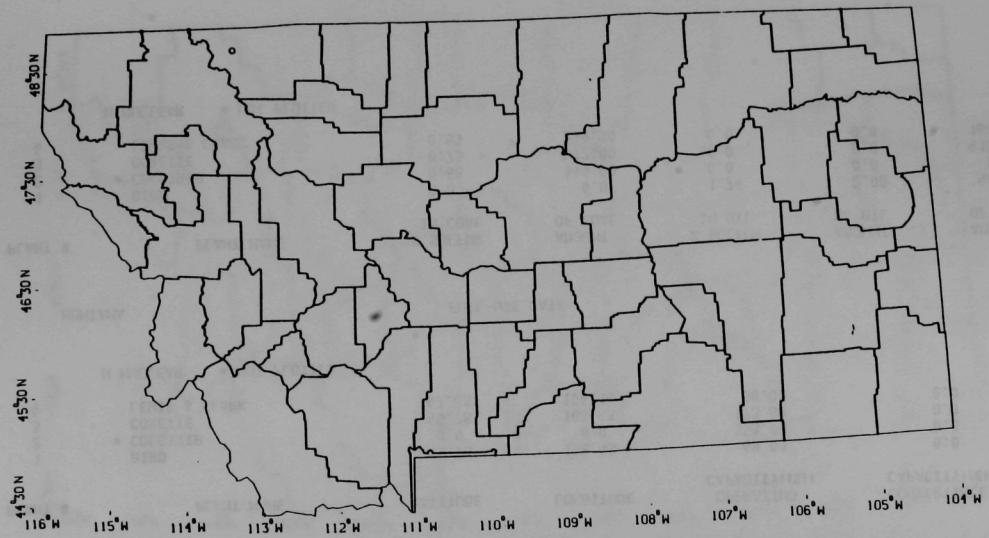


Fig. VIII.27. Montana: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.4. Montana: Power Plant and Fuel Use Data

MONTANA — POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	BIRD	45.78	108.48	69.00	0.0
2	* COLSTRIP	0.0	0.0	358.00	0.0
3	CORETTE	45.78	108.48	172.80	0.0
4	LEWIS & CLARK	47.68	104.16	50.00	0.0

N NUCLEAR * NOT PLOTTED

MONTANA — FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	BIRD	0.0	0.0	1.74	2.00	40.00
2	* COLSTRIP	0.68	149.00	0.0	0.0	0.0
3	CORETTE	0.75	592.00	0.0	0.0	415.00
4	LEWIS & CLARK	0.59	299.90	0.0	0.0	161.20

N NUCLEAR * NOT PLOTTED

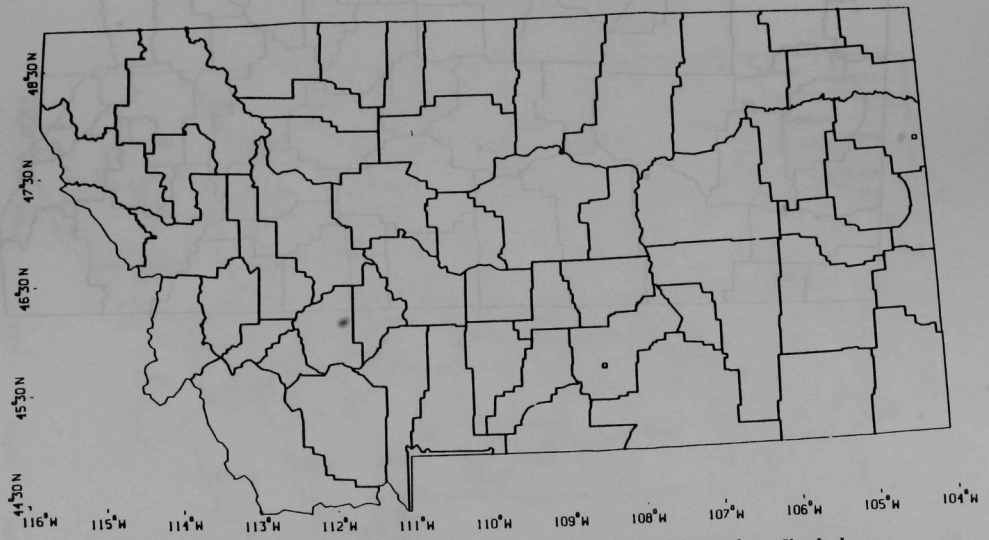


Fig. VIII 28. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

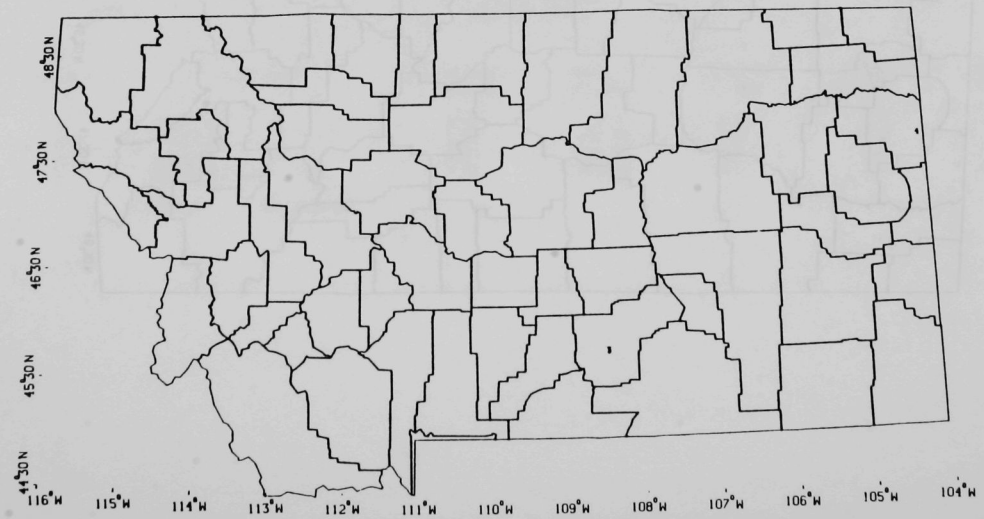


Fig. VIII.29. Power Plant Key (See Table VIII.4 for Identification and Fuel Use Data)

Fig. VIII.30. Montana: Key to Counties

REGION VIII: NORTH DAKOTA

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	0[b]	0	9	0
	1 yr			5	0
TSP	24 hr	0[b]	0	31	0
	1 yr			23	0
NO_x	1 yr	0[b]	-	3	0
CO	8 hr	0[b]	-	0[b]	0
O_x	1 hr	0[b]	-	1	0

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	8
Nuclear	0
Total	8

NORTH DAKOTA

North Dakota is the only state in the U.S. that is currently in attainment for all criteria pollutants.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Maximum statewide limit is 3 lb SO_2/MM Btu

B. TSP

1. The limit on existing sources is 0.80 lb PM/MM Btu

2. New Sources

   a. With heat input < 10 MM Btu/hr: 0.6 lb/MM Btu

   b. With heat input > 100,000 Btu/hr: 0.18 lb/MM Btu

   c. Interpolate between the above limits for sources of intermediate sizes

Table VIII.5. North Dakota: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	40	46.96	98.02			76. (1)				
2	40	46.92	98.00			87. (1)				
3	80	46.92	103.53			50. (1)	13. (1)			
5	160	46.31	103.42			112. (1)	18. (1)			
8	200	46.81	100.78			132. (1)	59. (2)			
10	200	46.80	100.76			176. (1)	55. (1)			
11	200	46.81	100.78	3. (1)	3. (1)			30. (1)		
12	220	46.79	96.83			104. (1)	27. (1)			
13	220	46.88	96.82			180. (1)	61. (2)			
14 *	220	46.88	96.78	10. (1)	3. (1)	90. (1)	45. (1)			98. (1)
16	340	47.32	102.53							
17 *	500	47.91	96.66			123. (1)				
18	500	47.93	97.07			173. (1)				
20	560	46.38	102.33	35. (1)		113. (1)	33. (1)			
21	720	47.68	101.41			159. (1)	23. (1)			
22	720	47.34	101.05			92. (1)	23. (1)			
23	720	47.68	101.41			40. (1)				
24	720	47.34	101.05	52. (1)	10. (1)			5. (1)		
25	760	47.26	101.78			126. (1)	35. (1)			
26	760	47.38	101.82	3. (1)	3. (1)					
27	760	47.38	101.82	3. (1)		141. (1)	25. (1)			
28	760	47.26	101.78	5. (1)						
29	800	46.83	100.89	3. (1)		111. (1)	40. (1)			
30	820	47.98	102.13			63. (1)	16. (1)			
31	860	47.21	101.18	53. (1)	10. (1)	99. (1)	27. (1)	5. (1)		
32	920	48.11	98.87			96. (1)	45. (1)			
33	980	46.27	96.61			80. (1)	33. (1)			
34	1060	47.49	100.48			90. (1)	21. (1)			
35	1060	47.49	100.48			96. (1)	19. (1)			
36	1140	46.88	102.79			103. (1)	51. (1)			
37	1140	46.87	102.83			10. (1)				
38	1180	46.87	98.65			57. (1)	26. (1)			
39	1180	46.91	98.71			104. (1)	46. (1)			
40	1300	48.24	101.30			109. (1)				
41	1300	48.45	101.56			53. (1)				
42	1340	48.15	103.62			60. (1)	36. (1)			

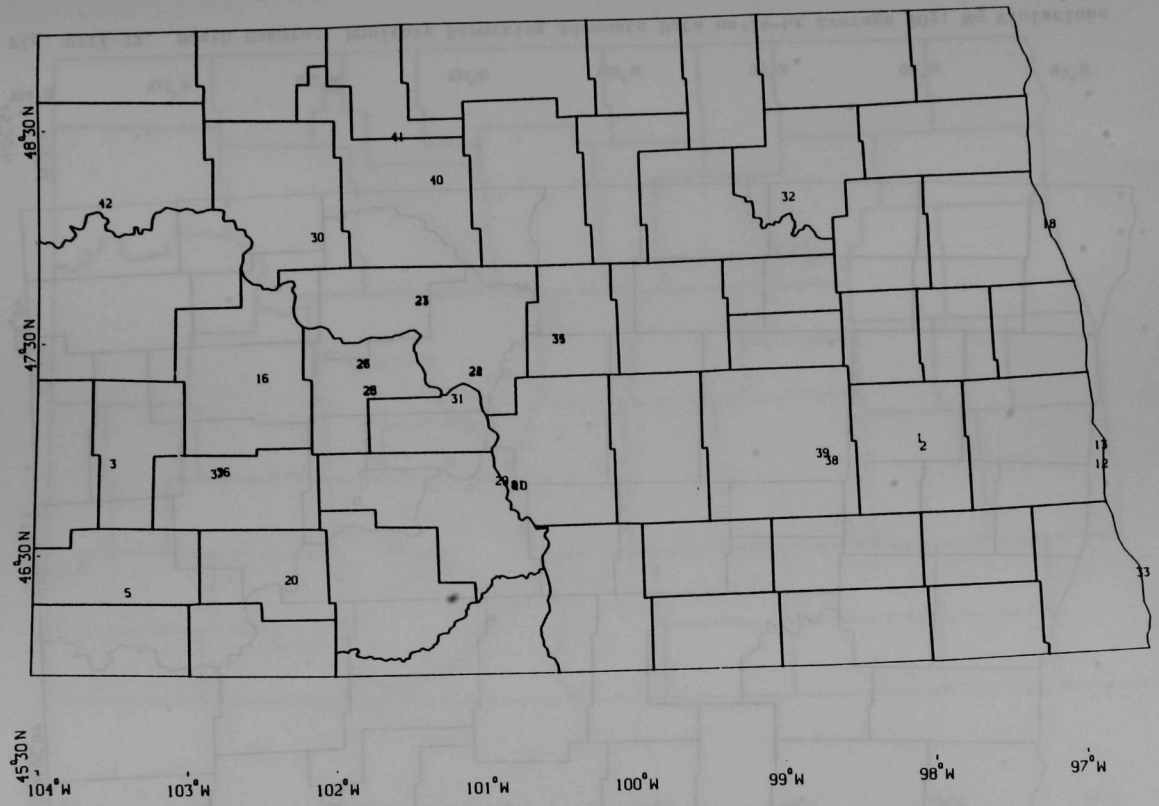


Fig. VIII.31. North Dakota: Locations of SAROAD Monitors
(See Table VIII.5 for Monitor Numbers)

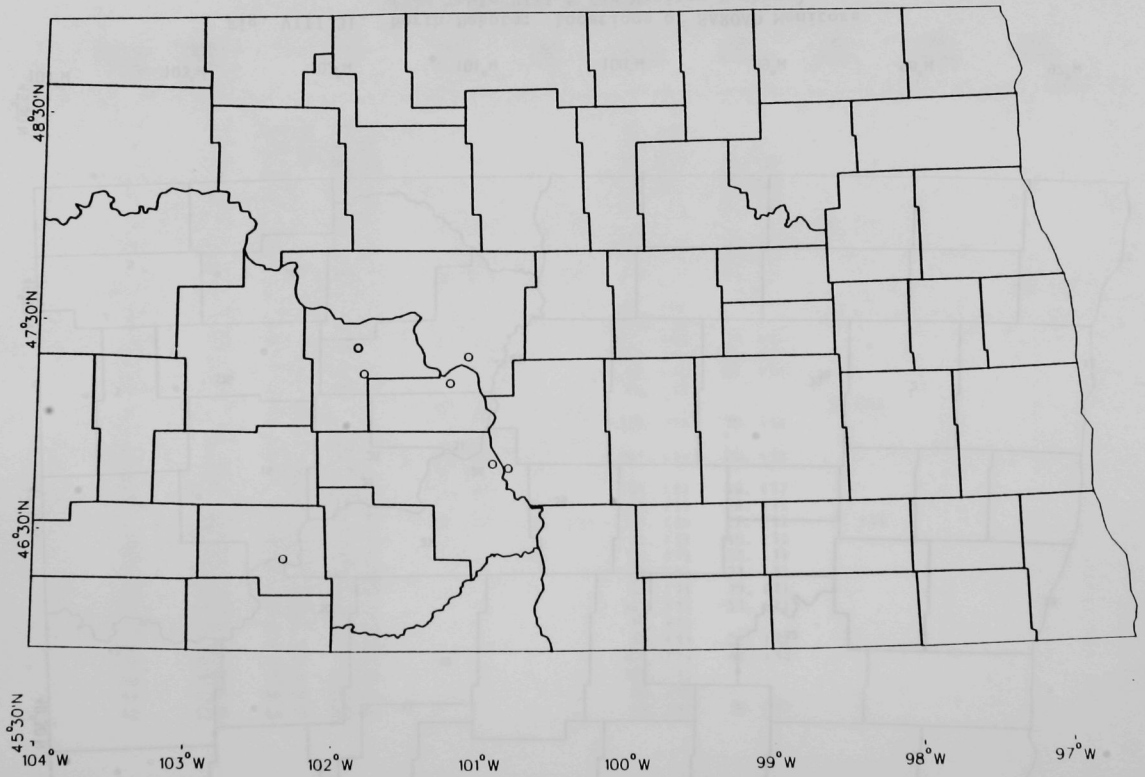


Fig. VIII.32. North Dakota: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

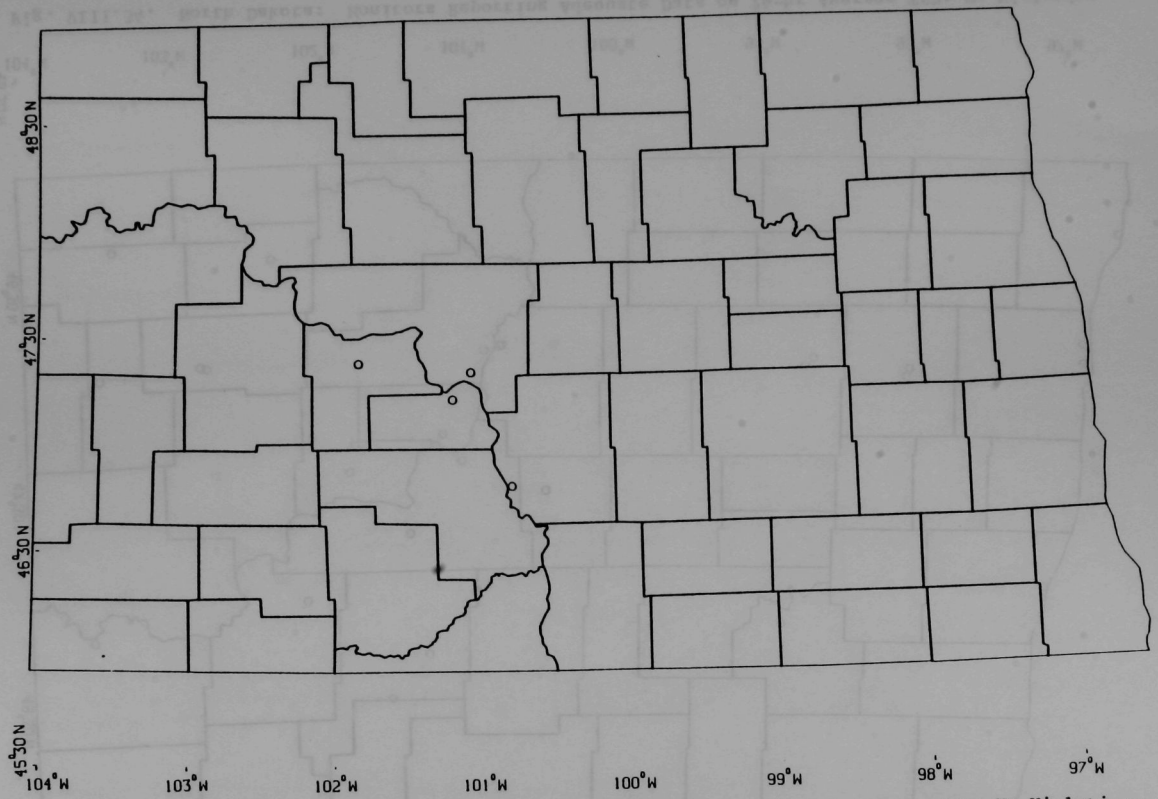


Fig. VIII.33. North Dakota: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

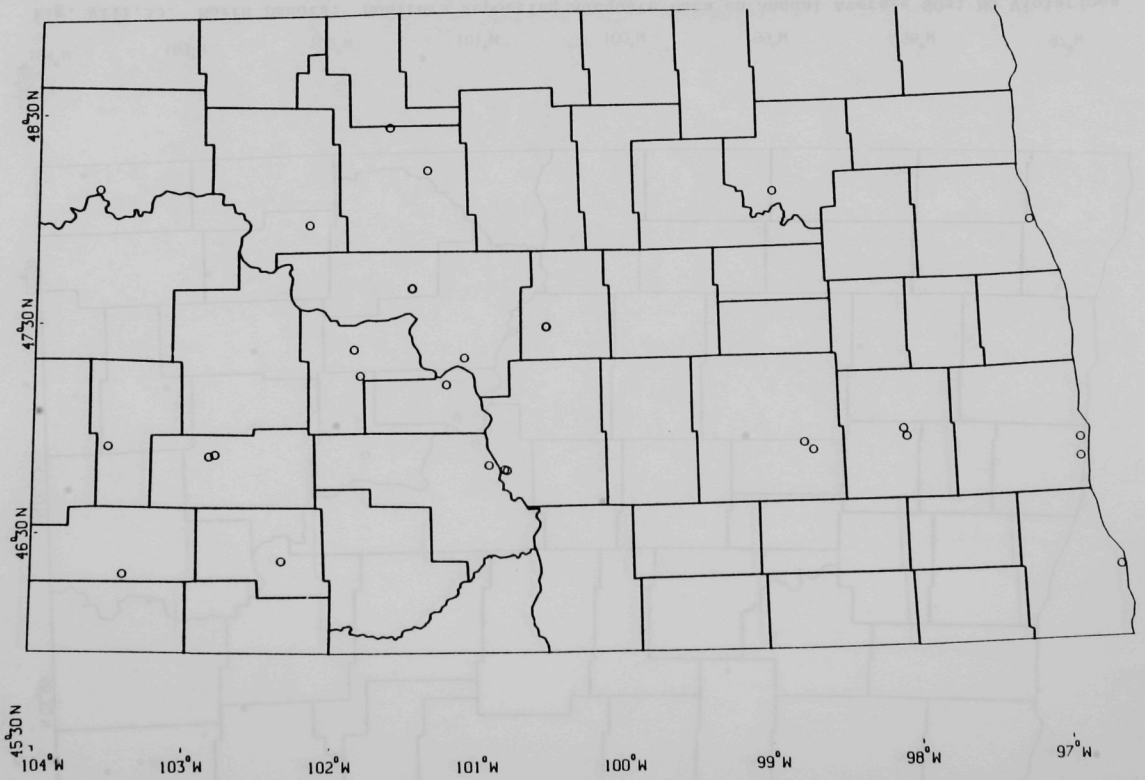


Fig. VIII.34. North Dakota: Monitors Reporting Adequate Data on 24-hr Average TSP; No Violations

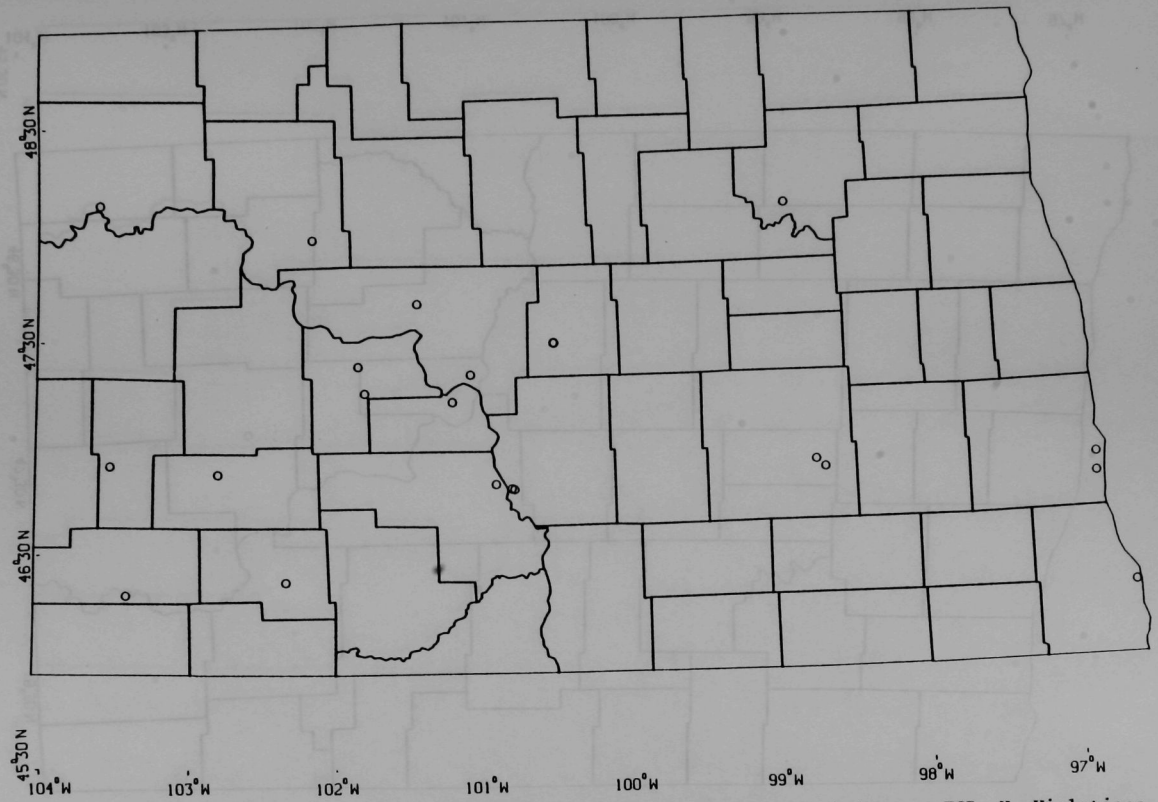


Fig. VIII.35. North Dakota: Monitors Reporting Adequate Data on Annual Average TSP; No Violations

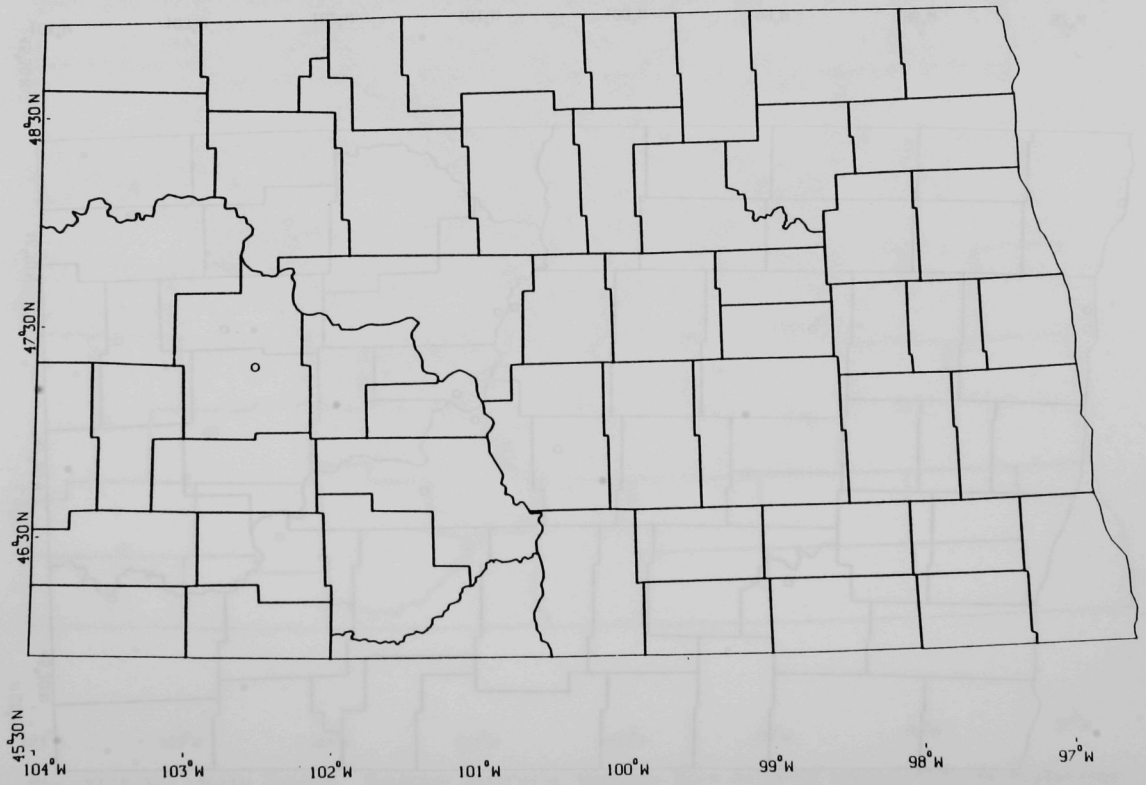


Fig. VIII.36. North Dakota: Monitors Reporting Adequate Data on 1-hr Average O_x; No Violations

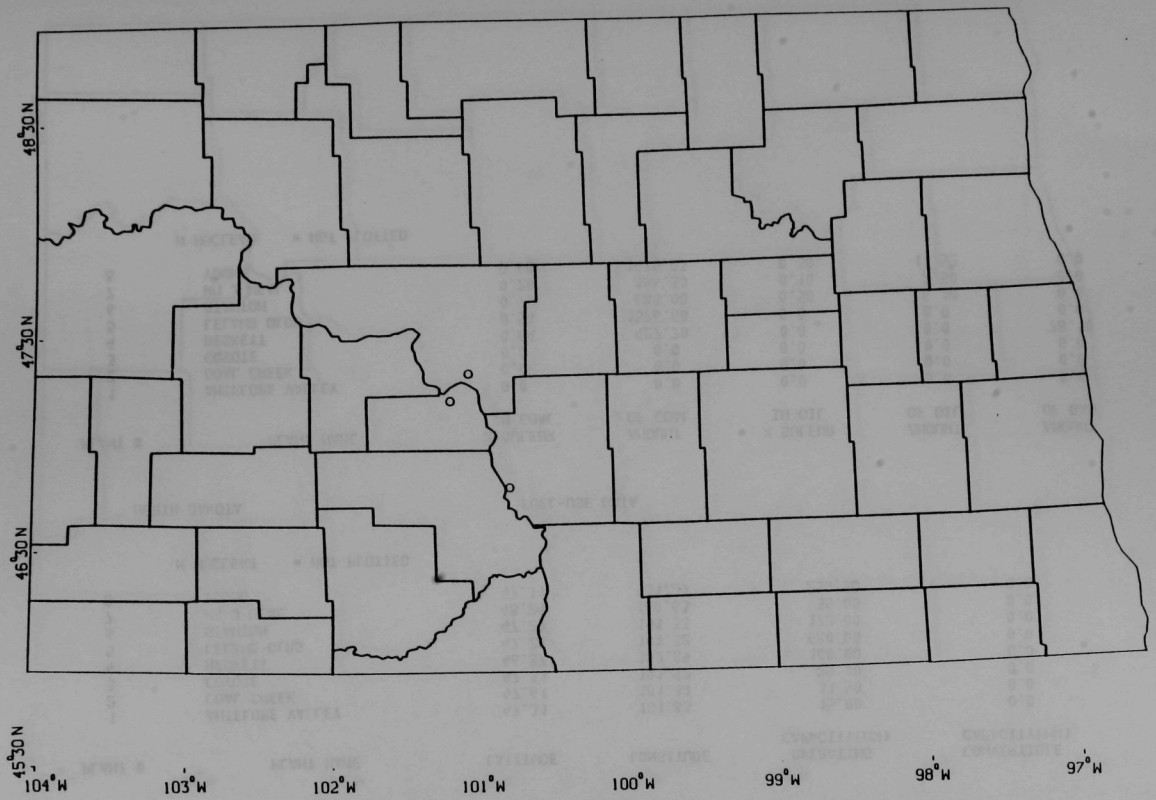


Fig. VIII.37. North Dakota: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.6. North Dakota: Power Plant and Fuel Use Data

NORTH DAKOTA — POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	ANTELOPE VALLEY	47.31	101.83	15.00	0.0
2	COAL CREEK	47.61	101.31	31.90	0.0
3	COYOTE	47.33	101.92	29.00	0.0
4	HESKETT	46.87	100.89	100.00	0.0
5	LELAND OLDS	47.28	101.32	680.00	0.0
6	STANTON	47.29	101.33	172.00	0.0
7	WM J NEAL	48.24	100.63	36.00	0.0
8	YOUNG	47.11	101.29	256.50	0.0

N NUCLEAR * NOT PLOTTED

NORTH DAKOTA — FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	ANTELOPE VALLEY	0.0	0.0	0.0	0.0	0.0
2	COAL CREEK	0.0	0.0	0.0	0.0	0.0
3	COYOTE	0.0	0.0	0.0	0.0	0.0
4	HESKETT	0.64	427.70	0.0	0.0	78.10
5	LELAND OLDS	0.54	1576.00	0.0	0.0	0.0
6	STANTON	0.76	683.00	0.50	6.10	0.0
7	WM J NEAL	0.20	186.30	0.10	2.50	0.0
8	YOUNG	0.68	1470.03	0.30	11.52	0.0

N NUCLEAR * NOT PLOTTED

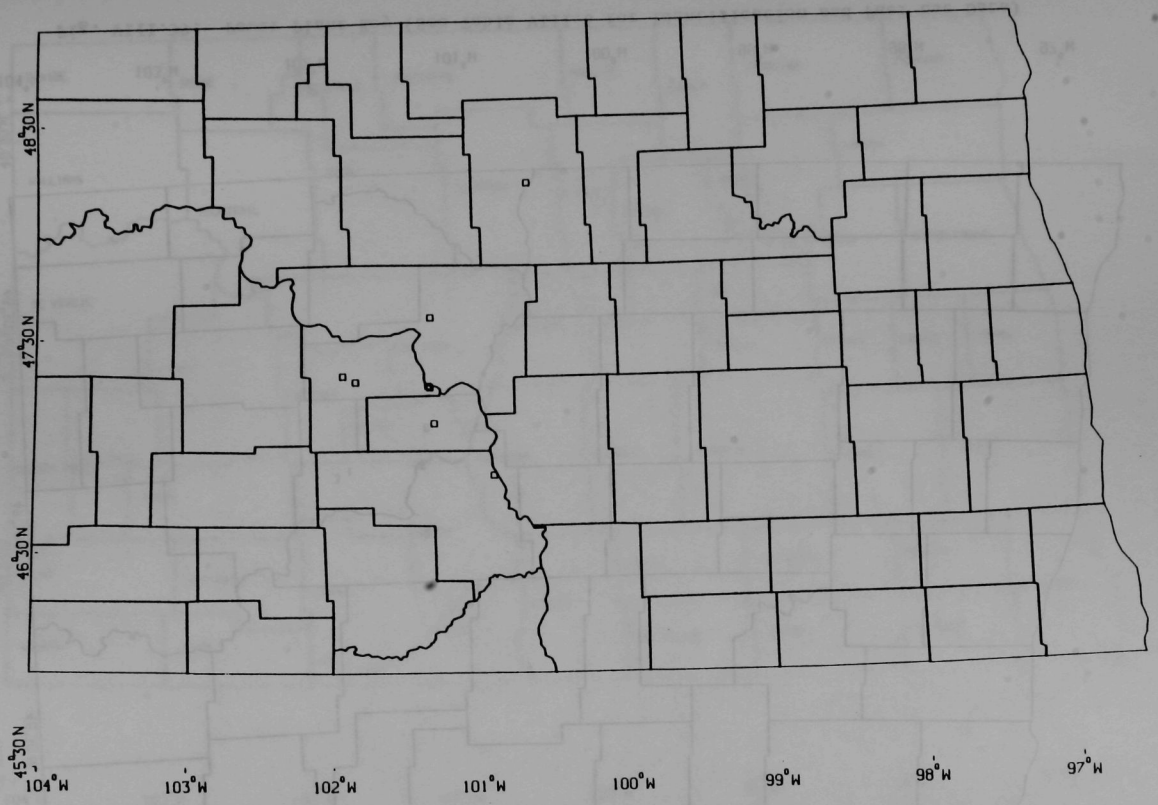


Fig. VIII 38. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

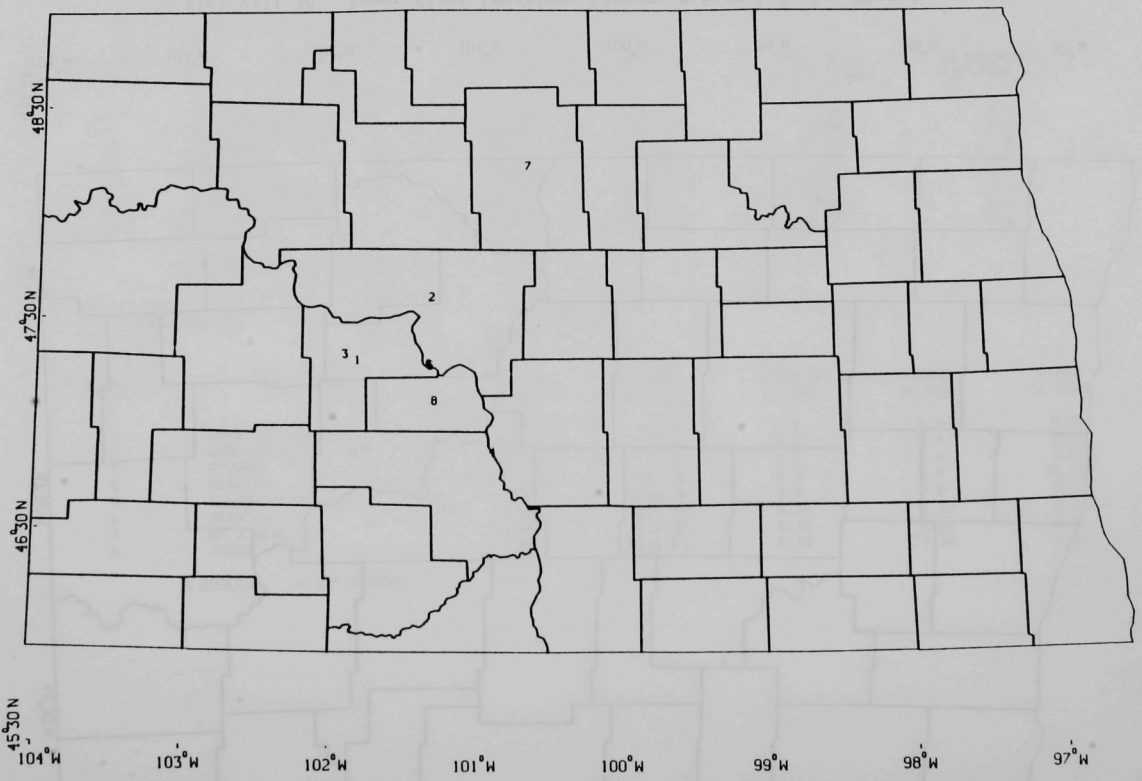


Fig. VIII.39. Power Plant Key (See Table VIII.6 for Identification and Fuel Use Data)

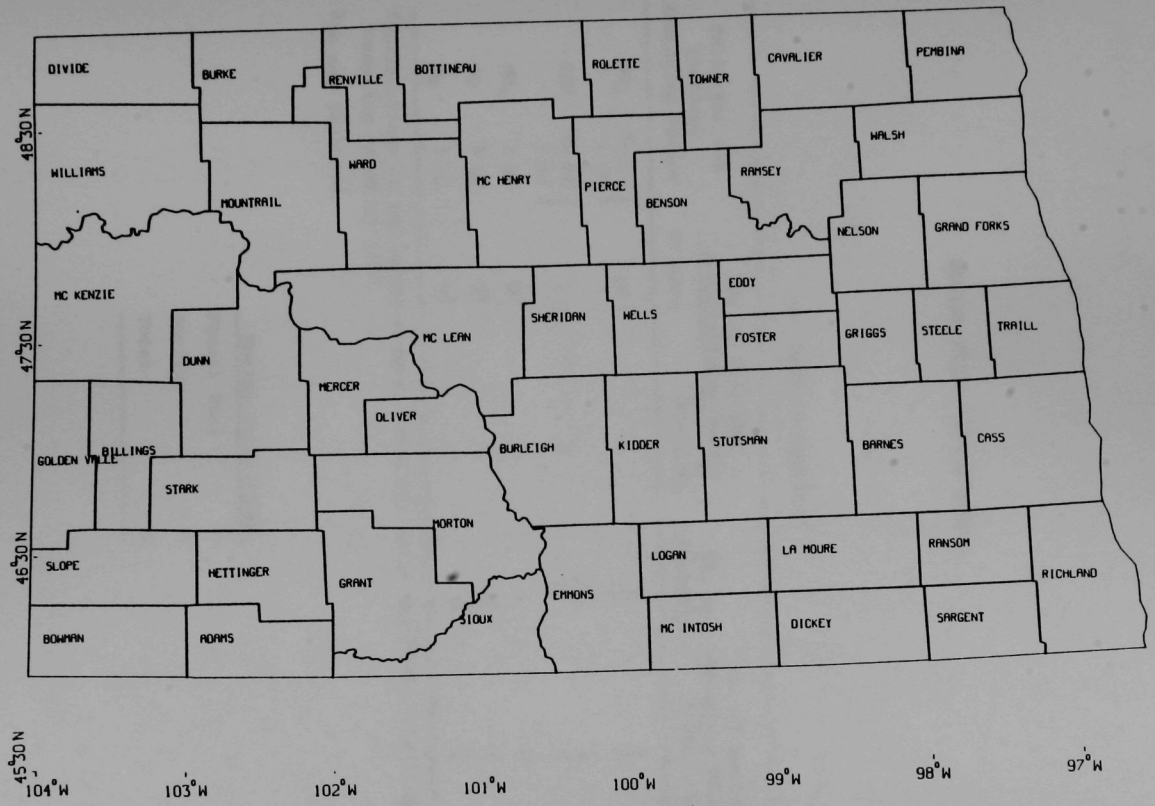


Fig. VIII.40. North Dakota: Key to Counties

REGION VIII: SOUTH DAKOTA

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	0[b]	0	8	0
	1 yr			3	0
TSP	24 hr	1	0	23	3
	1 yr			11	2
NO_x	1 yr	0[b]	-	1	0
CO	8 hr	0[b]	-	0[b]	0
O_x	1 hr	0[b]	-	0[b]	0

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	4
Nuclear	0
Total	4

SOUTH DAKOTA (Official SIP, 1/79)

I. SOURCES OF THE PROBLEM

South Dakota has only one area designated as in nonattainment for TSP -- Rapid City. The cause of violations is fugitive dust from a quarry site, roads, construction, and exposed earth and erosion.

II. ATTAINMENT STRATEGIES

A. TSP

1. In 1977, only 2 out of 6 monitors recorded violations of secondary standards
2. Only 1 of the six recorded violations of primary standards
3. Paving roads and parking lots
4. Street-sweeping program

III. NEW SOURCE REVIEW

Performed by Pennington County Air Quality Review Board with standard requirements for sources in nonattainment areas.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Existing sources: 2.0 lb SO_2/MM Btu

B. TSP

1. Existing sources: 0.30 lb PM/MM Btu

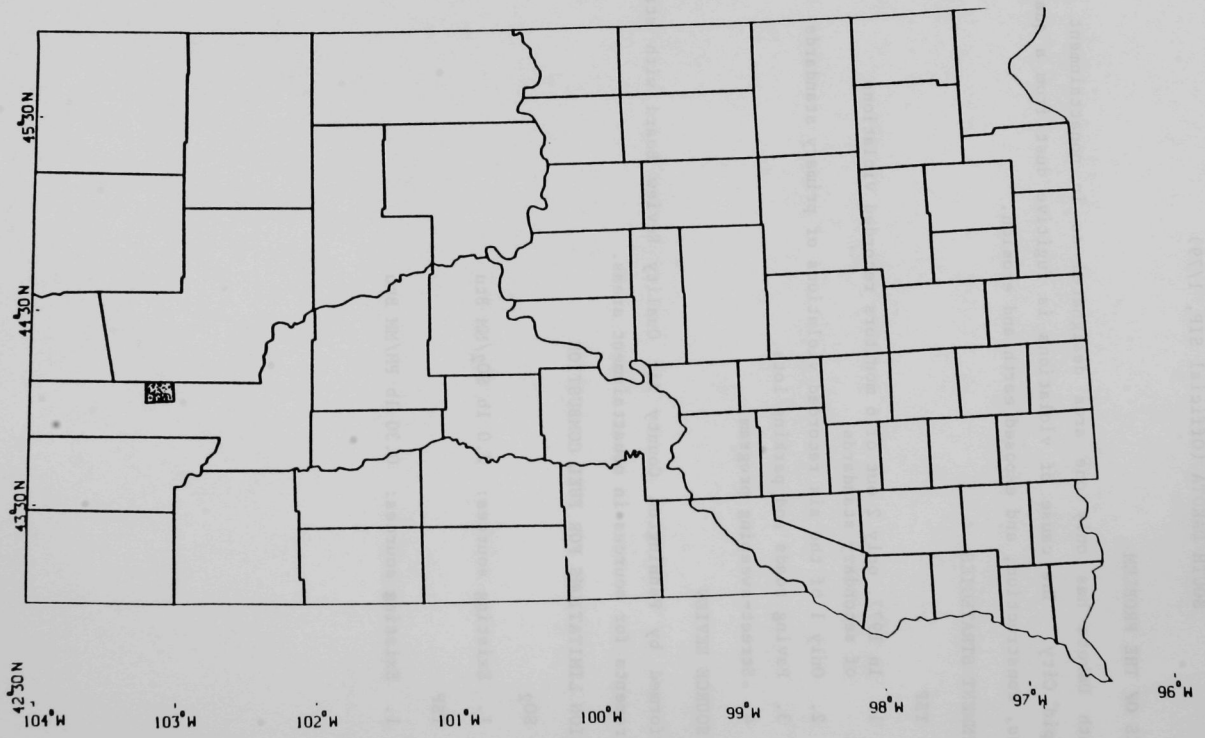


Fig. VIII.41. South Dakota: TSP Nonattainment Areas as Designated May 1979

Table VIII.7. South Dakota: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	60	44.36	98.21			153. (1)	63. (2)			
2	160	44.32	96.78			225. (2)	39. (1)			
3	180	45.46	98.48			240. (2)				
4	380	53.51	97.12			183. (1)	59. (2)			
6	420	43.72	103.93	13. (1)	4. (1)	37. (1)	10. (1)	3. (1)		
8	440	43.71	98.02			134. (1)	55. (1)			
9	760	45.29	103.55			15. (1)				
10	760	45.60	103.54			47. (1)	12. (1)			
11	760	45.60	103.54	33. (1)		46. (1)				
13	800	44.35	100.35	25. (1)		100. (1)				
14	980	44.58	103.85	45. (1)		55. (1)	19. (1)			
15	980	44.50	103.88			36. (1)				
16 *	1220	96.68	43.52			113. (1)				
17	1220	43.57	96.72	126. (1)		118. (1)	51. (1)			
18	1220	43.58	96.73	3. (1)		125. (1)				
19	1220	43.55	96.73			165. (1)				
21	1300	44.10	103.27			1052. (4)				
22	1300	44.09	103.27			896. (4)	166. (4)			
23	1300	44.08	103.25	8. (1)	3. (1)					
24	1300	44.08	103.23			399. (4)	110. (4)			
25	1300	44.08	103.25			158. (1)				
26	1300	44.08	103.23	13. (1)	4. (1)					
27	1300	44.02	103.87			173. (1)				
28	1320	45.89	102.18			77. (1)	23. (1)			
29	1820	42.87	97.39			187. (1)				

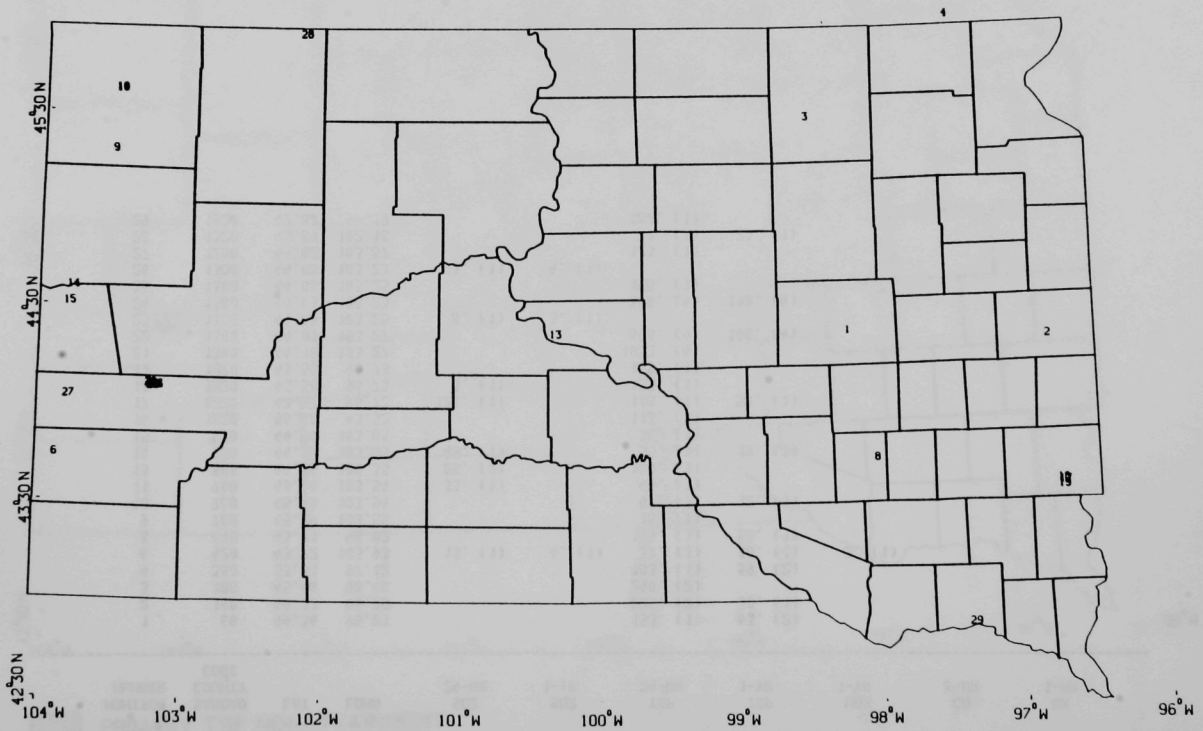


Fig. VIII.42. South Dakota: Locations of SAROAD Monitors
(See Table VIII.7 for Monitor Numbers)

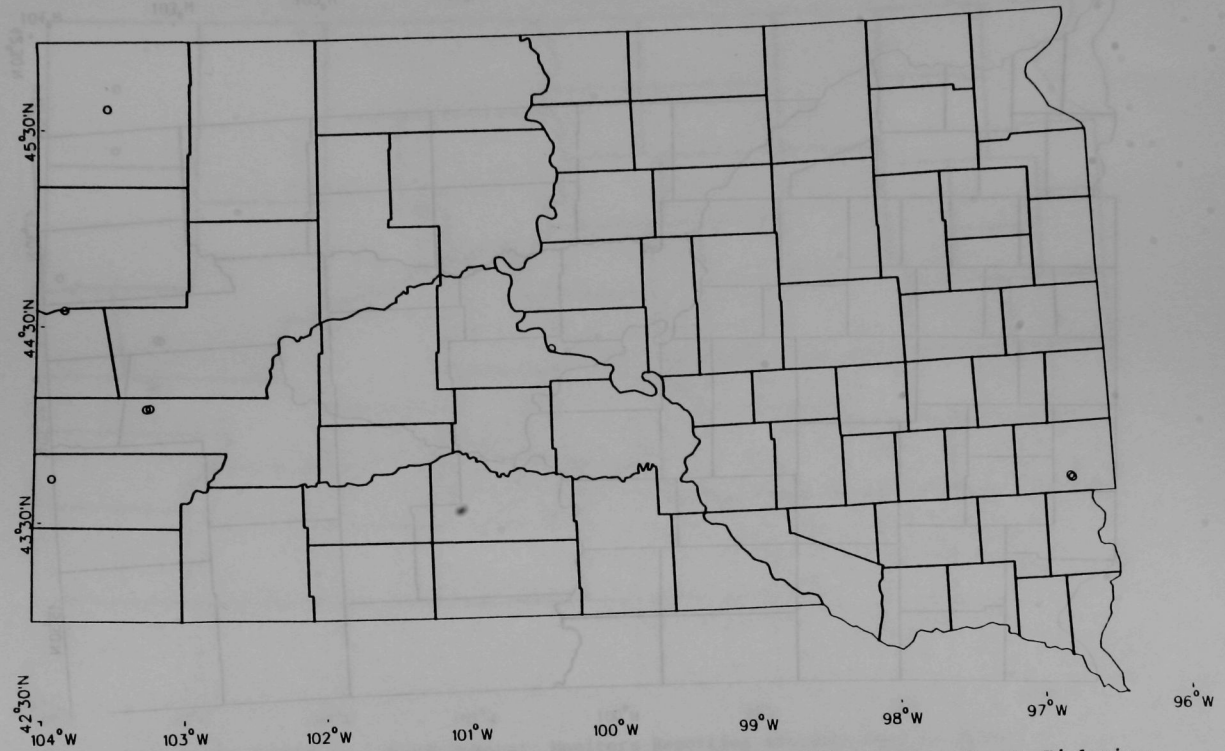


Fig. VIII.43. South Dakota: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

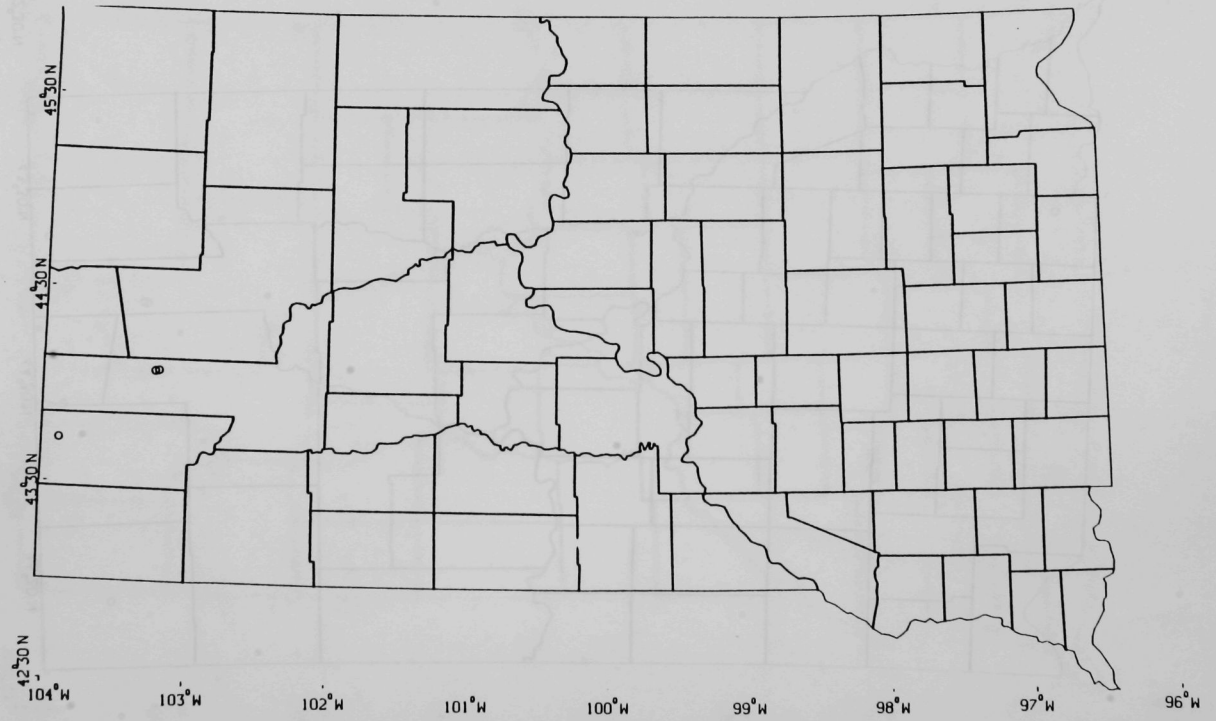


Fig. VIII.44. South Dakota: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

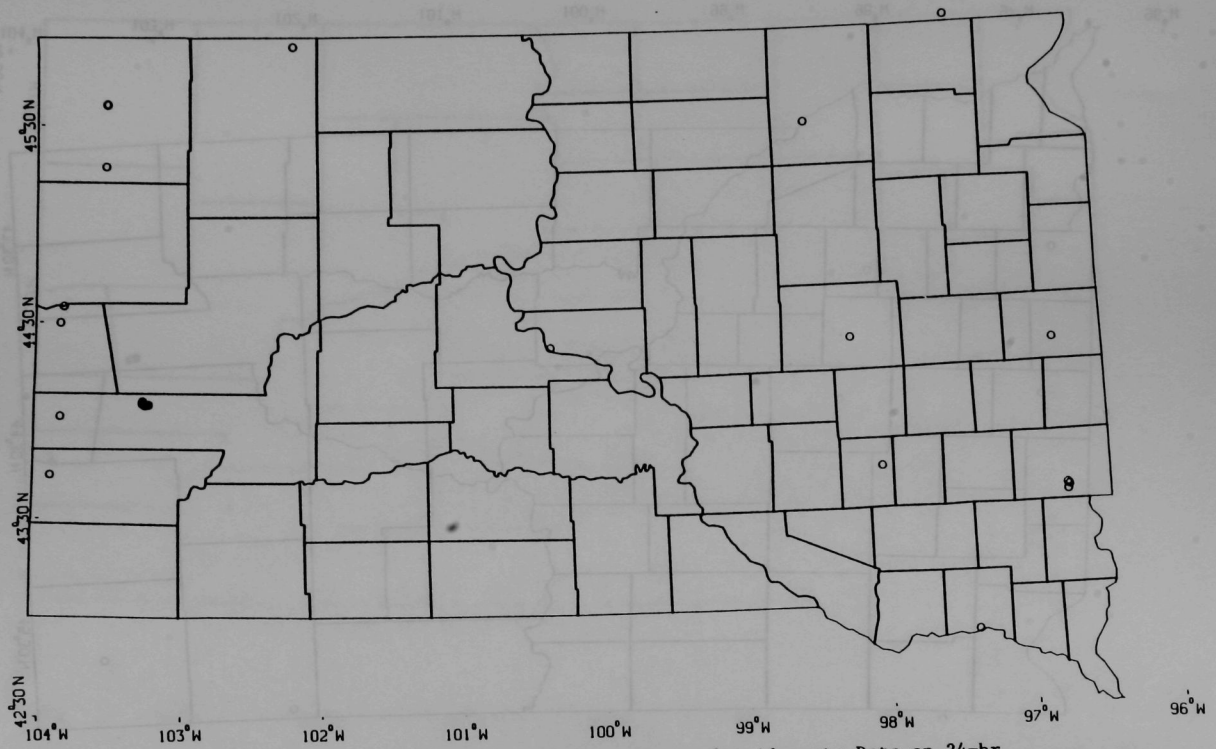


Fig. VIII.45. South Dakota: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

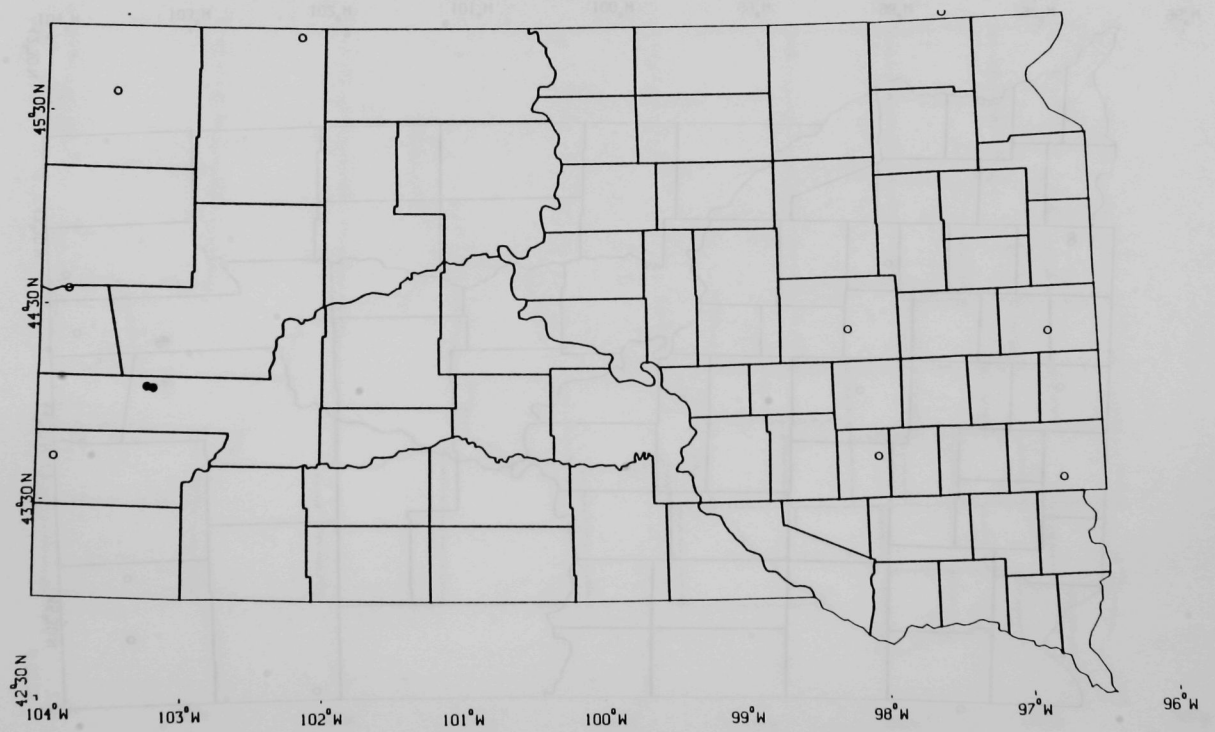


Fig. VIII.46. South Dakota: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

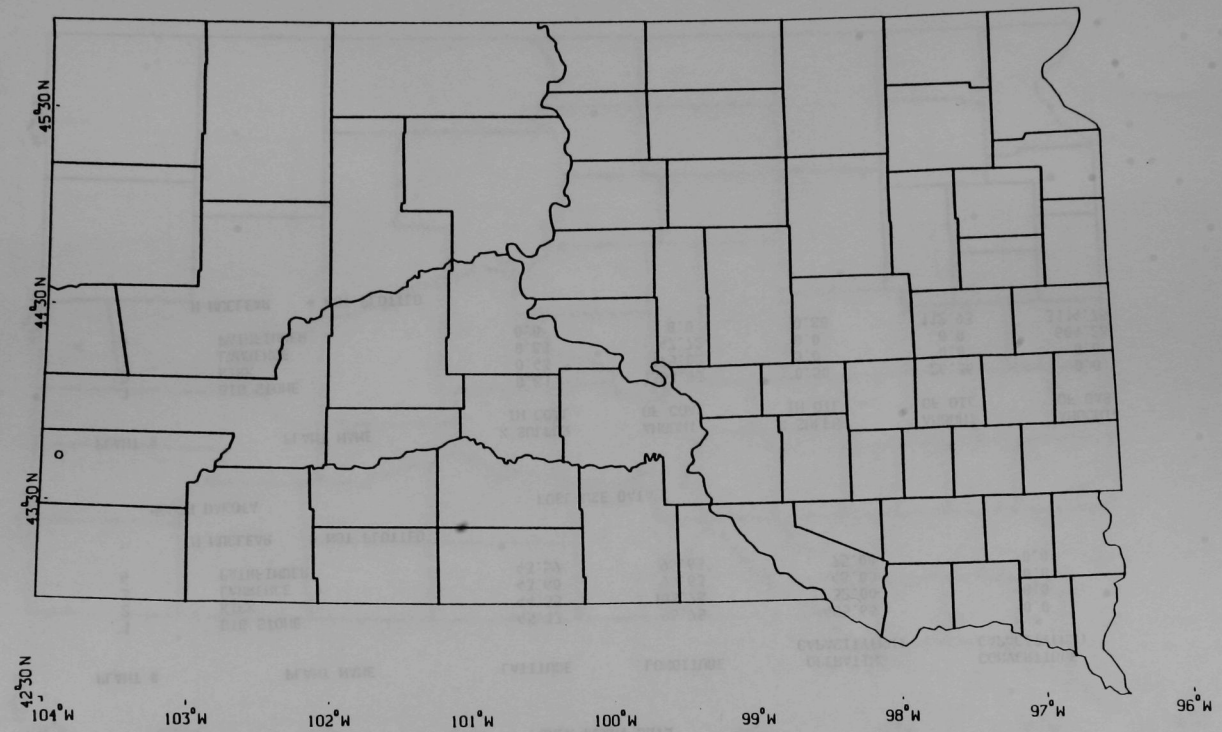


Fig. VIII.47. South Dakota: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.8. South Dakota: Power Plant and Fuel Use Data

SOUTH DAKOTA — POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	BIG STONE	45.17	96.75	455.66	0.0
2	KIRK	44.35	103.78	32.00	0.0
3	LAWRENCE	43.60	96.63	48.00	0.0
4	PATHFINDER	43.59	96.66	75.00	0.0

N NUCLEAR * NOT PLOTTED

SOUTH DAKOTA — FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	BIG STONE	0.81	1351.93	0.50	26.36	0.0
2	KIRK	0.43	175.02	0.0	0.0	0.0
3	LAWRENCE	0.83	47.72	0.0	0.0	604.28
4	PATHFINDER	0.0	0.0	0.80	112.93	3114.75

N NUCLEAR * NOT PLOTTED

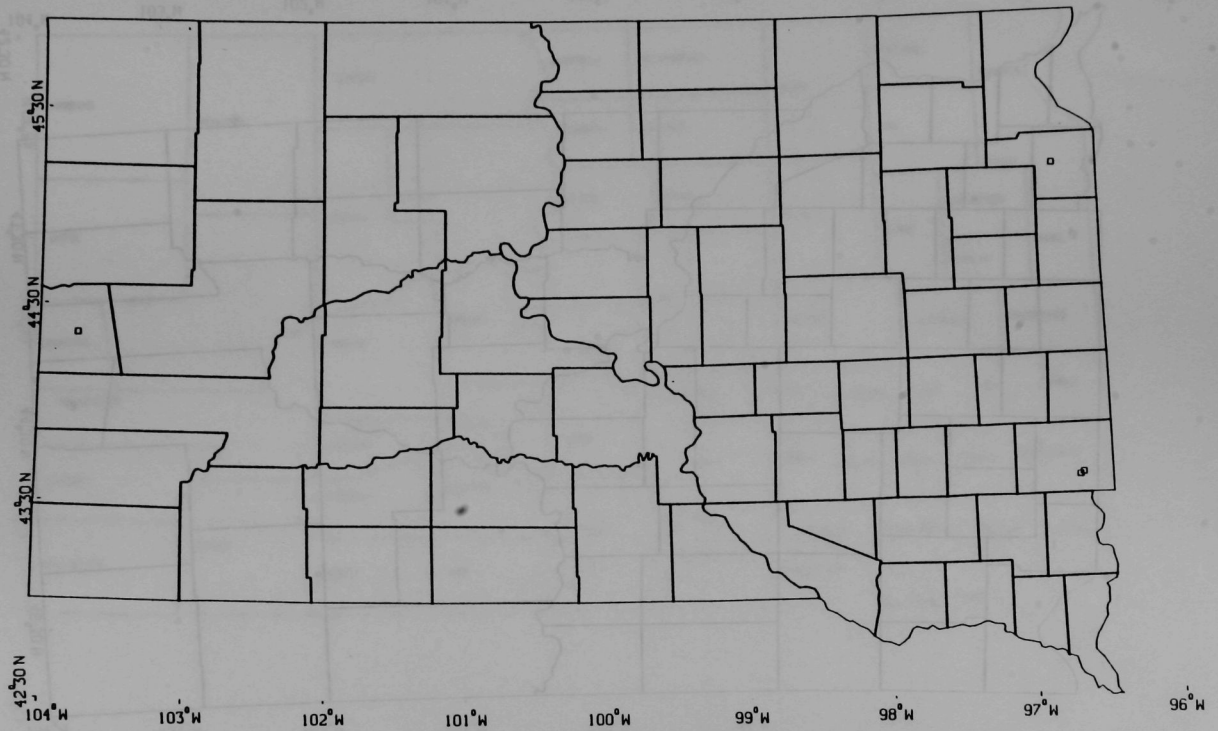


Fig. VIII 48. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

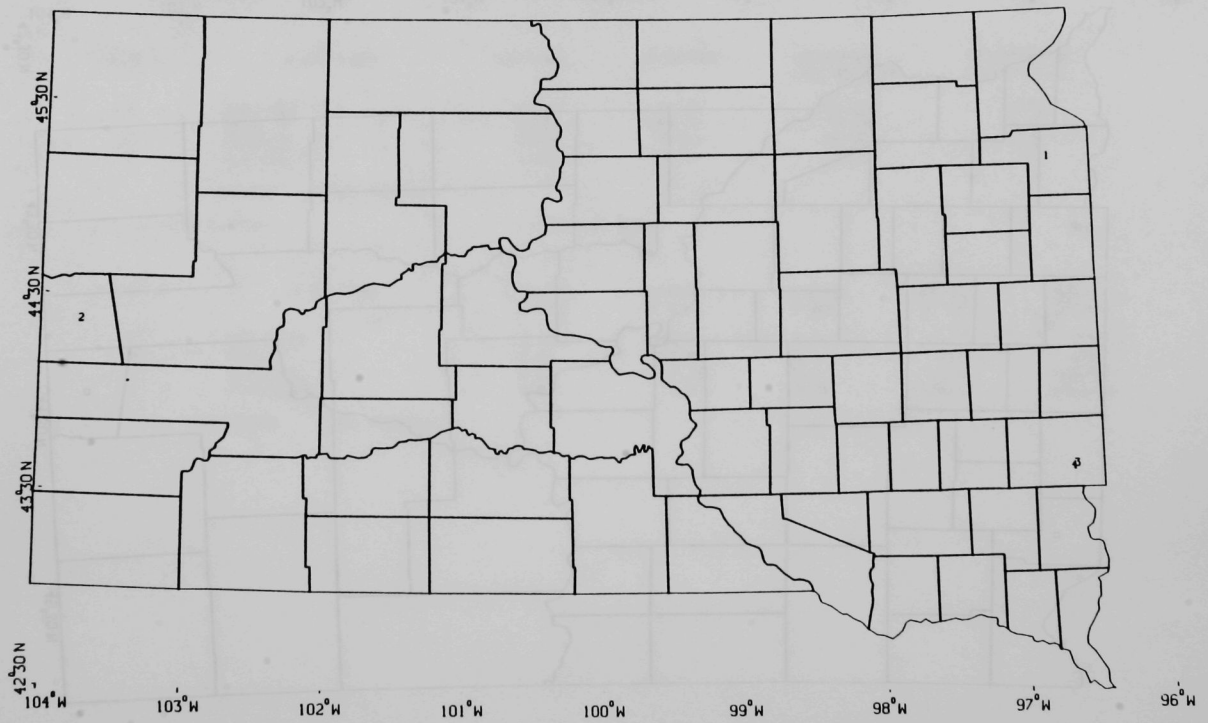


Fig. VIII.49. Power Plant Key (See Table VIII.8 for Identification and Fuel Use Data)

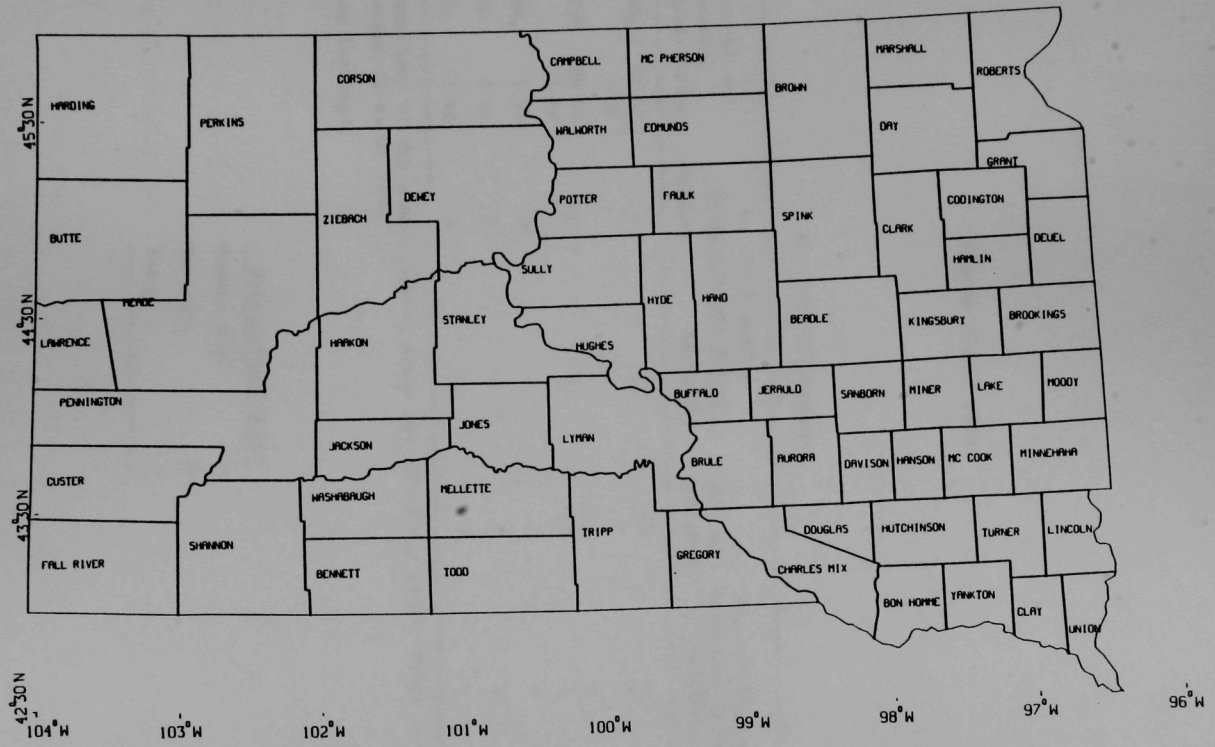


Fig. VIII.50. South Dakota: Key to Counties

REGION VIII: UTAH

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	2	0	23	8
	1 yr			6	3
TSP	24 hr	2	1	31	8
	1 yr			12	3
NO_x	1 yr	0[b]	-	5	0
CO	8 hr	3	-	6	4
O_x	1 hr	1	-	6	6

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	4
Nuclear	0
Total	4

UTAH (Official SIP, 1/79)

I. SOURCES OF THE PROBLEM

The EPA designated Cedar City (in Iron County) and Salt Lake and Tooele Counties as in nonattainment for SO_2. In Cedar City, the violations are judged to be the result of the type of fuel oil used at South Utah State College heating plant. Emissions from the Kennecott Copper Smelter are responsible for the exceedances in Salt Lake and Tooele Counties. Space heating and electric power generation contribute to overall SO_2 emissions in the counties, but violations were measured only in the vicinity of the smelter and in locations in the path of the plume.

The Wasatch Front Interstate AQCR (Davis, Salt Lake, Utah and Weber Counties) was designated as in nonattainment for TSP (part secondary and part primary). Facilities for the primary metals industry (partially steel mills and nonferrous smelters) are the largest of 18 major point sources in the area surrounding Salt Lake City and Provo. The SIP notes contributions to the particulate load from industrial process fugitive emissions and from resuspended road dust and construction activity.

The cities of Bountiful, Ogden, Provo, and Salt Lake City have been designated as in nonattainment for CO. Motor vehicles are responsible for over 90% of the emissions in high density traffic areas and for the majority of the emissions elsewhere. The Wasatch Front AQCR has been designated as in nonattainment for ozone, on the basis of violations recorded in Bountiful, Lindon, Ogden, Provo, and Salt Lake City. Approximately half of the VOC emissions can be attributed to motor vehicles. Stationary sources such as petroleum refineries and gasoline storage and distribution facilities and solvent metal cleaning activities account for the rest of VOC emissions. There are no NO_x nonattainment areas.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Cedar City

a. The college heating plant had been using oil with a sulfur content of 3.1%, in violation of state regulations requiring 1.5%

b. The college acquired the proper grade of fuel oil and the violation has been corrected

c. The state will monitor the area to determine its status

2. Salt Lake and Tooele Counties

a. The state claims that violations are a result of emissions from the old smelter

- the old reverberatory furnace has been shut down
- the new smelter uses a taller stack, fugitive gas collection, and improved acid plants

b. The state requests redesignation to unclassified status until monitoring data available are for the new smelter configuration

c. Existing regulations limiting sulfur input and sulfur emission are adequate

d. The EPA denied redesignation, noting that the existing SIP limitation had already been disapproved

B. TSP

1. Emission reductions from point sources

a. Using RACT

b. The EPA claims that the SIP is inadequate since specific enforceable regulations are not included on, e.g.,

- the U.S. Steel Geneva Works
- the smelting operations at Kennecott

2. Fugitive emissions: the state will develop regulations for control of fugitive process emissions and fugitive dust

C. Ozone

1. Federal Motor Vehicle Emissions Control Program

2. Inspection and Maintenance of vehicles

3. RACT on the following stationary sources:

a. Tank truck gasoline loading terminals

b. Storage tanks

c. Bulk gasoline plants
d. Petroleum refining processes
e. Solvent metal cleaning

4. Reductions in cutback asphalt use
5. Transportation Control Measures

a. Improved mass transit
b. Carpooling
c. Computer-controlled traffic signals

6. Utah and Weber attain the revised ozone standard

D. Carbon Monoxide

1. FMVECP
2. Inspection and maintenance of vehicles
3. Transportation Control Measures (same as ozone)

III. NEW SOURCE REVIEW

Utah will require emissions offsets from major new sources in nonattainment areas and will permit excess emission reductions to be banked. The regulations do not require a specific "one for one" offset but rather a sufficient offset to avoid a new violation of the NAAQS or to assure that reasonable further progress towards attainment is not impeded.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Statewide limit on sulfur content of fuel

a. 1.0% sulfur by weight for coal
b. 1.5% sulfur by weight for oil

B. TSP

1. SIP emission limitations were provided for existing sources in nonattainment areas only

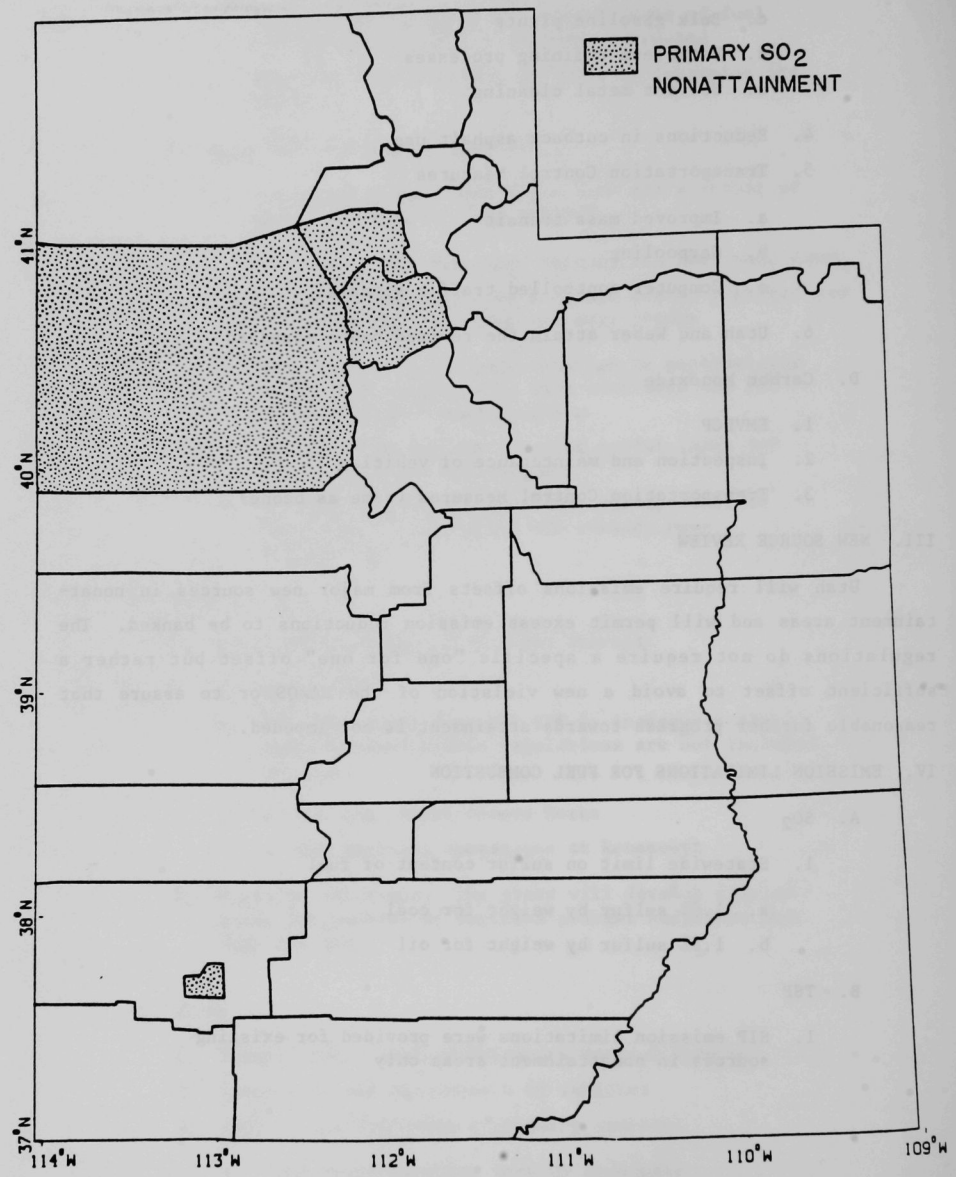


Fig. VIII.51. Utah: SO_2 Nonattainment Areas as Designated May 1979

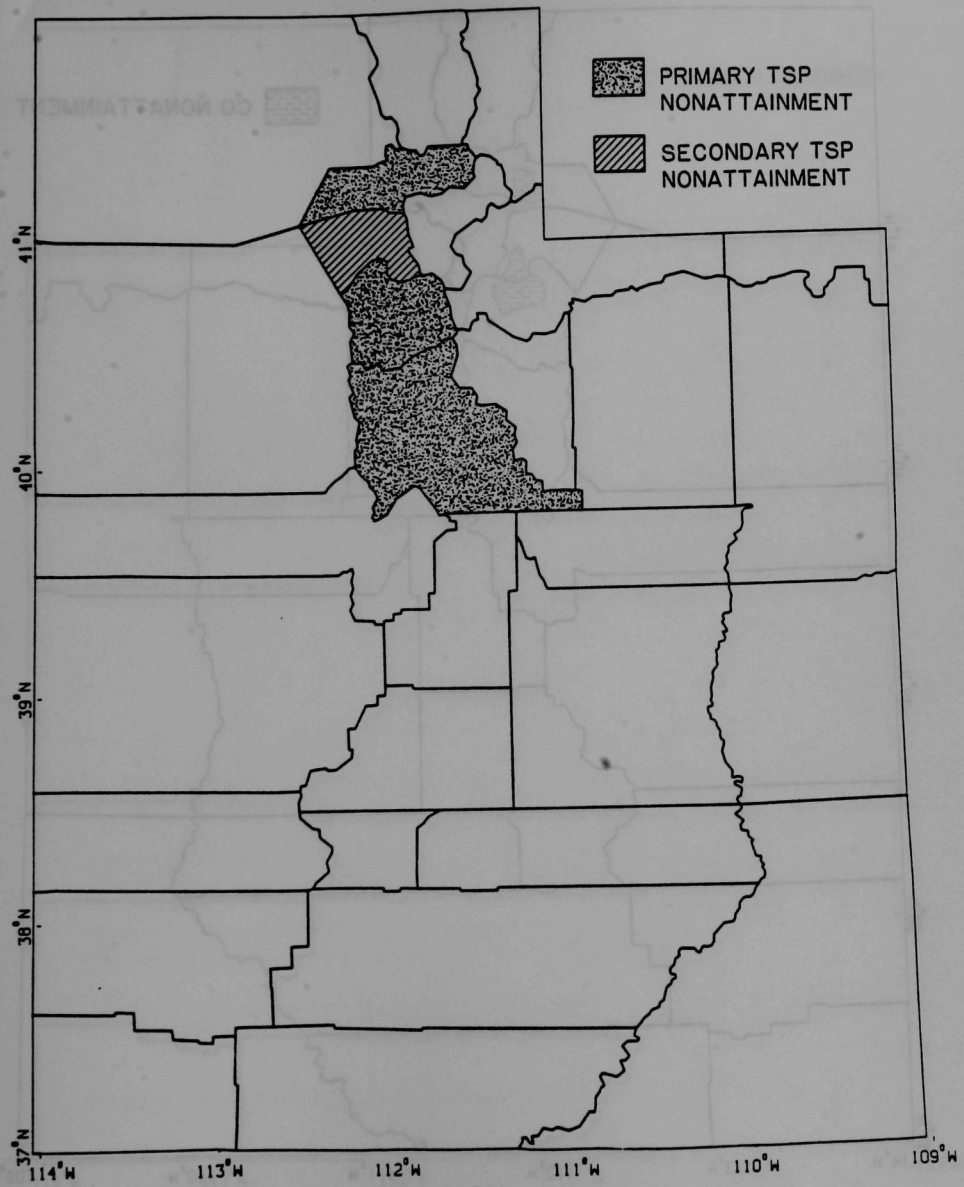


Fig. VIII.52. Utah: TSP Nonattainment Areas as Designated May 1979

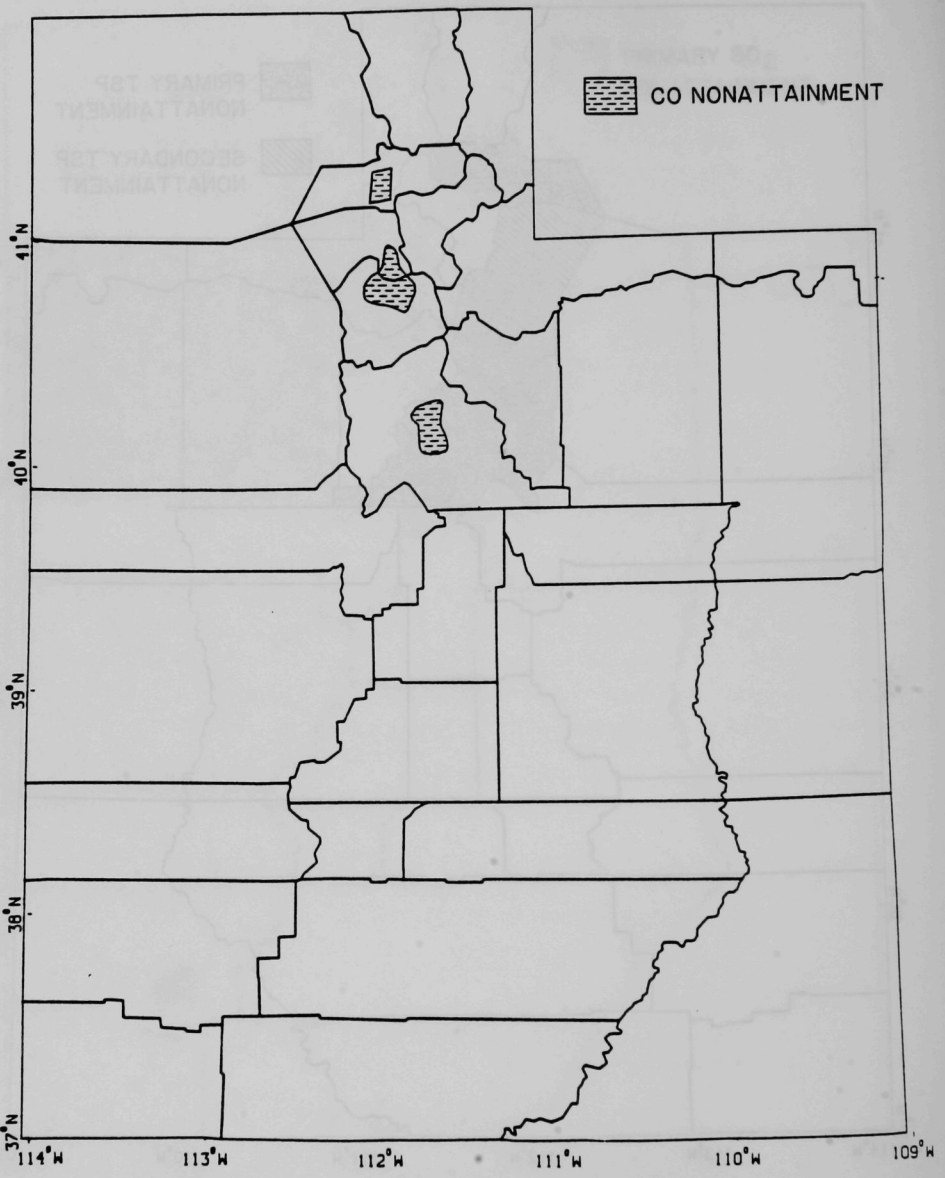


Fig. VIII.53. Utah: CO Nonattainment Areas as Designated May 1979

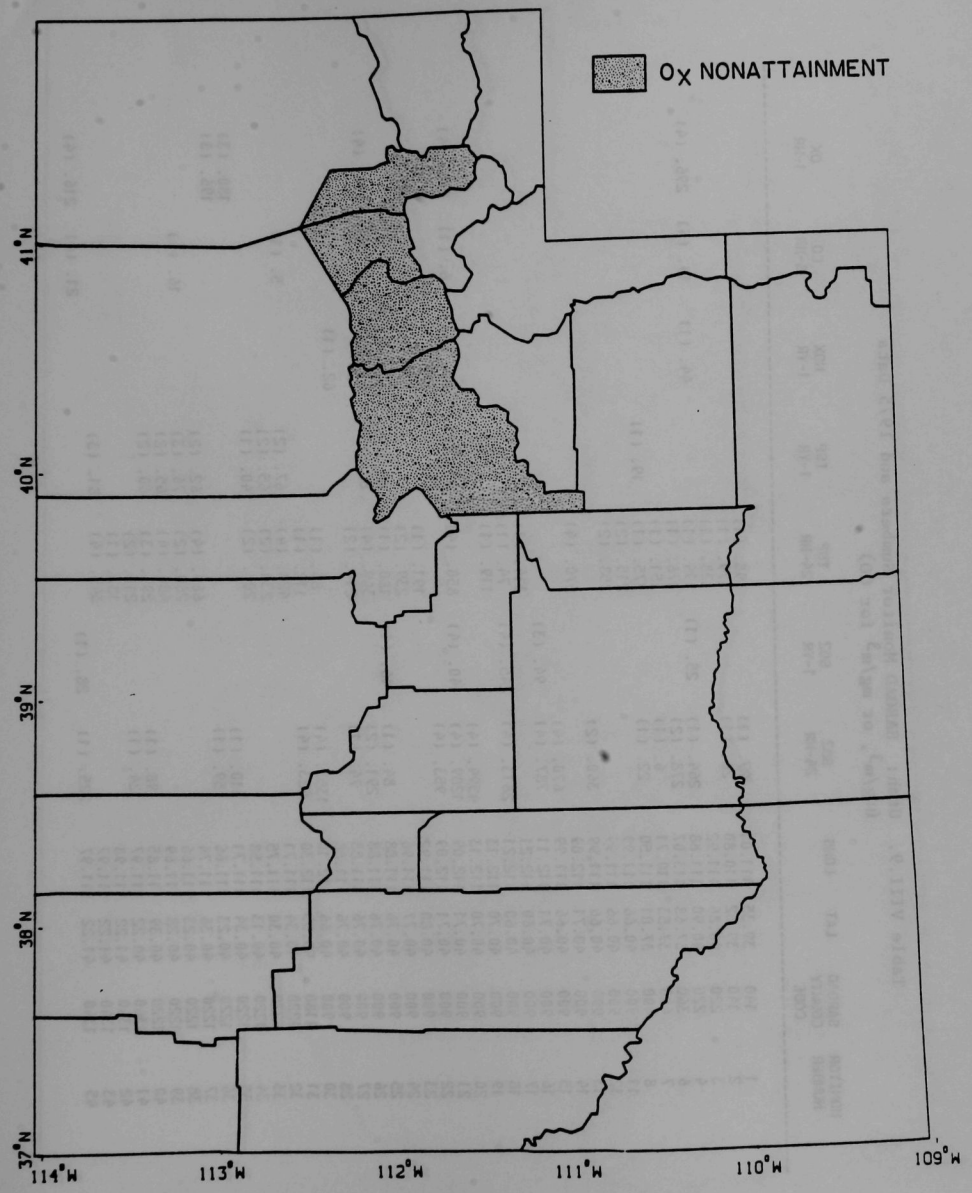


Fig. VIII.54. Utah: O_x Nonattainment Areas as Designated May 1979

Table VIII.9. Utah: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	140	39.35	111.01	27. (1)		98. (1)				
2	140	39.62	110.80	26. (1)		179. (1)				
3	220	40.86	111.92			138. (1)				
4	220	40.90	111.88	264. (1)	25. (1)	194. (1)		44. (1)	19. (4)	296. (4)
6	360	37.68	113.07	278. (2)		176. (1)				
7	400	37.53	110.71	6. (1)		151. (1)				
8	400	37.01	111.50	22. (1)		175. (1)	19. (1)			
11	900	40.66	111.99			215. (2)				
12	900	40.66	111.99			253. (2)				
13	900	40.66	111.99	360. (2)						
14	900	40.71	112.09			570. (4)				
15	900	40.66	111.99	670. (4)						
16	900	40.71	112.11	787. (4)	94. (3)					
17	900	40.60	112.21			114. (1)				
18	900	40.60	112.21	2813. (4)	245. (4)	74. (1)				
19	900	40.70	112.13			119. (1)				
20	900	40.70	112.13	4594. (4)						
21	900	40.71	112.09	1289. (4)	140. (4)	850. (4)	73. (2)	24. (1)	6. (1)	274. (4)
22	900	40.71	112.09	953. (4)						
23	900	40.80	111.92			191. (1)				
24	900	40.77	111.96			239. (2)				
25	900	40.76	111.88	84. (1)	16. (1)	180. (1)	62. (2)	54. (1)		
26	900	40.76	111.88	291. (2)		349. (4)	82. (3)	69. (1)	18. (4)	238. (4)
27	900	40.76	111.83	74. (1)		214. (2)				
28	900	40.76	111.83					62. (1)		
30	900	40.66	112.10	1353. (4)		85. (1)				
31	1180	40.55	112.30	623. (4)		112. (1)				
32	1220	40.34	111.71			423. (4)	67. (2)		5. (1)	
33	1220	40.30	111.75			230. (2)	65. (2)			
34	1220	40.13	111.58			207. (2)	40. (1)			
35	1220	40.34	111.71	110. (1)						180. (3)
36	1220	40.23	111.66	59. (1)						196. (3)
37	1220	40.36	111.74			661. (4)	62. (2)			
38	1220	40.23	111.66			260. (2)	76. (3)		16. (4)	
39	1220	40.28	111.69			430. (4)	65. (2)			
40	1220	40.39	111.85	98. (1)		299. (3)	60. (2)			
41	1340	40.22	111.97	124. (1)		217. (2)				
42	1340	41.22	111.98			187. (1)				
43	1340	41.22	111.97			345. (4)	81. (3)			
45	1340	41.22	111.97	225. (1)	28. (1)				21. (4)	216. (4)

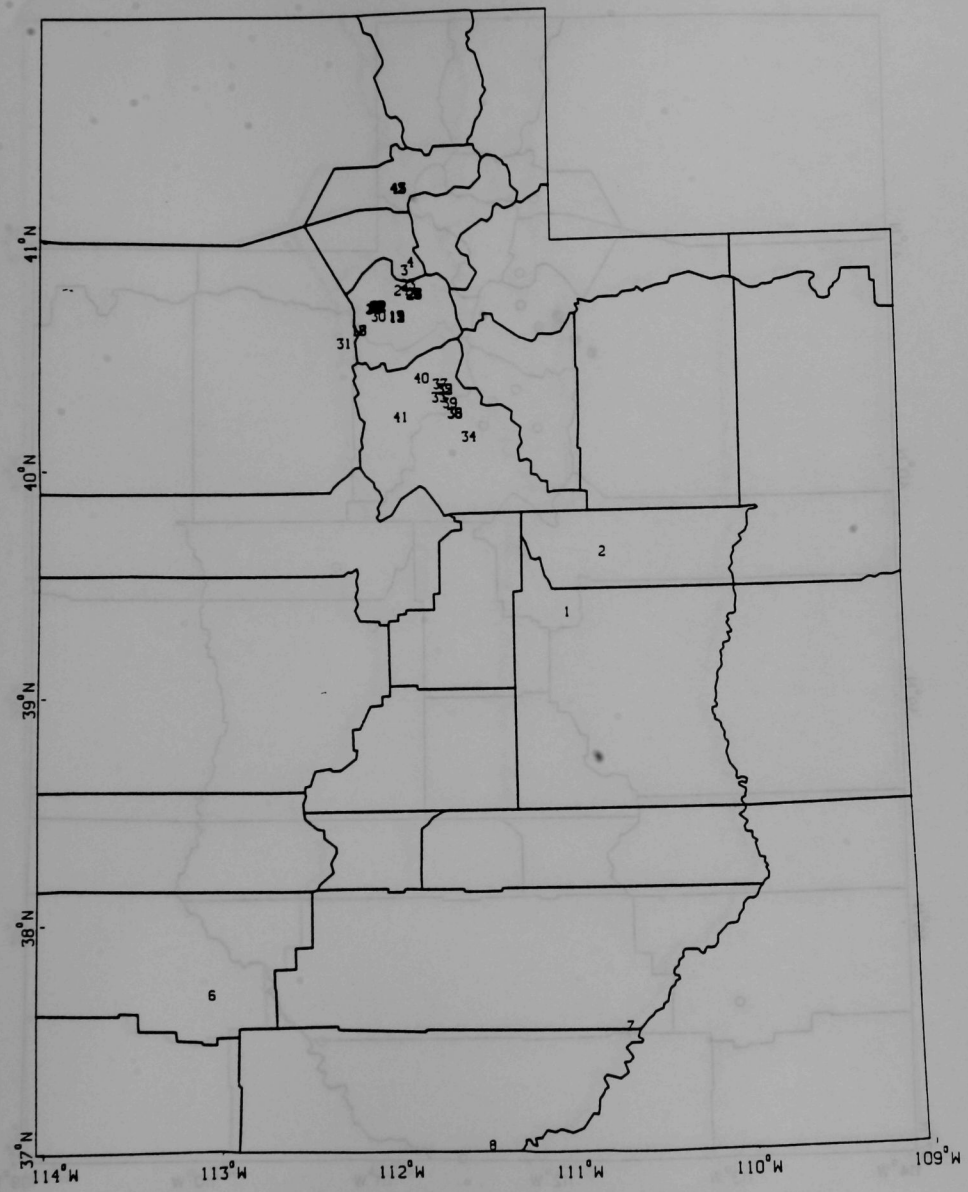


Fig. VIII.55. Utah: Locations of SAROAD Monitors
(See Table VIII.9 for Monitor Numbers)

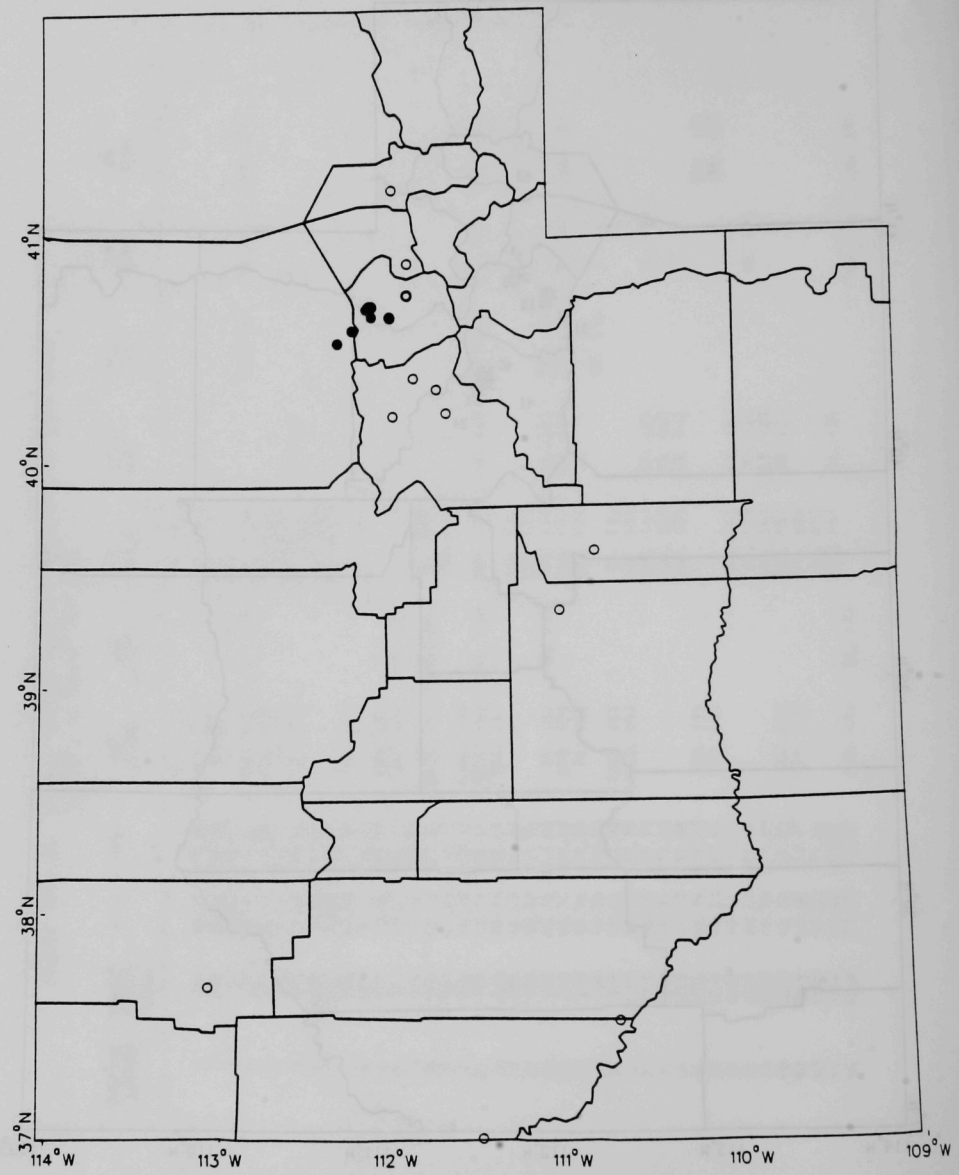


Fig. VIII.56. Utah: Monitors Reporting Adequate Data on 24-hr Average SO_2; Violations Shown by Shaded Circles

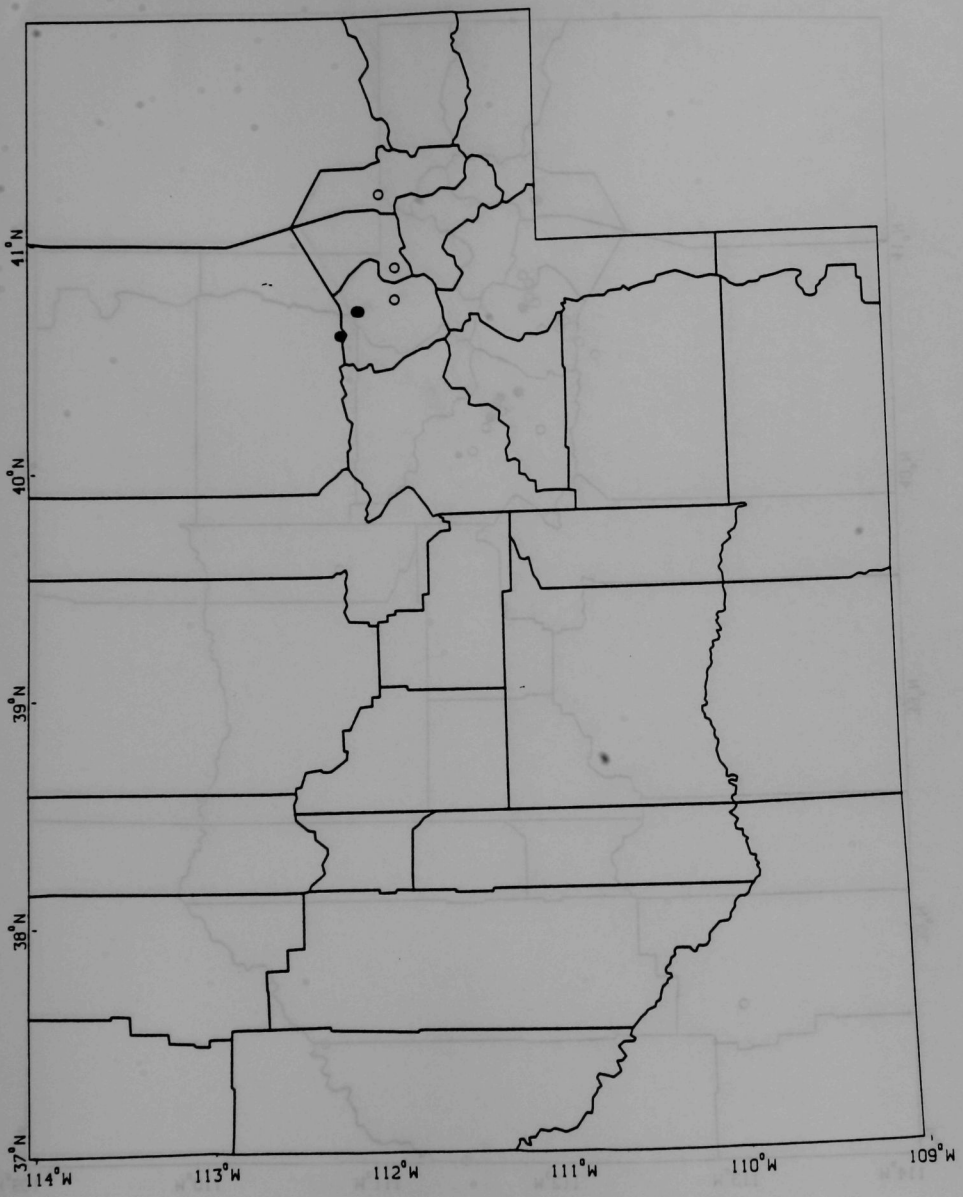


Fig. VIII.57. Utah: Monitors Reporting Adequate Data on Annual Average SO_2; Violations Shown by Shaded Circles

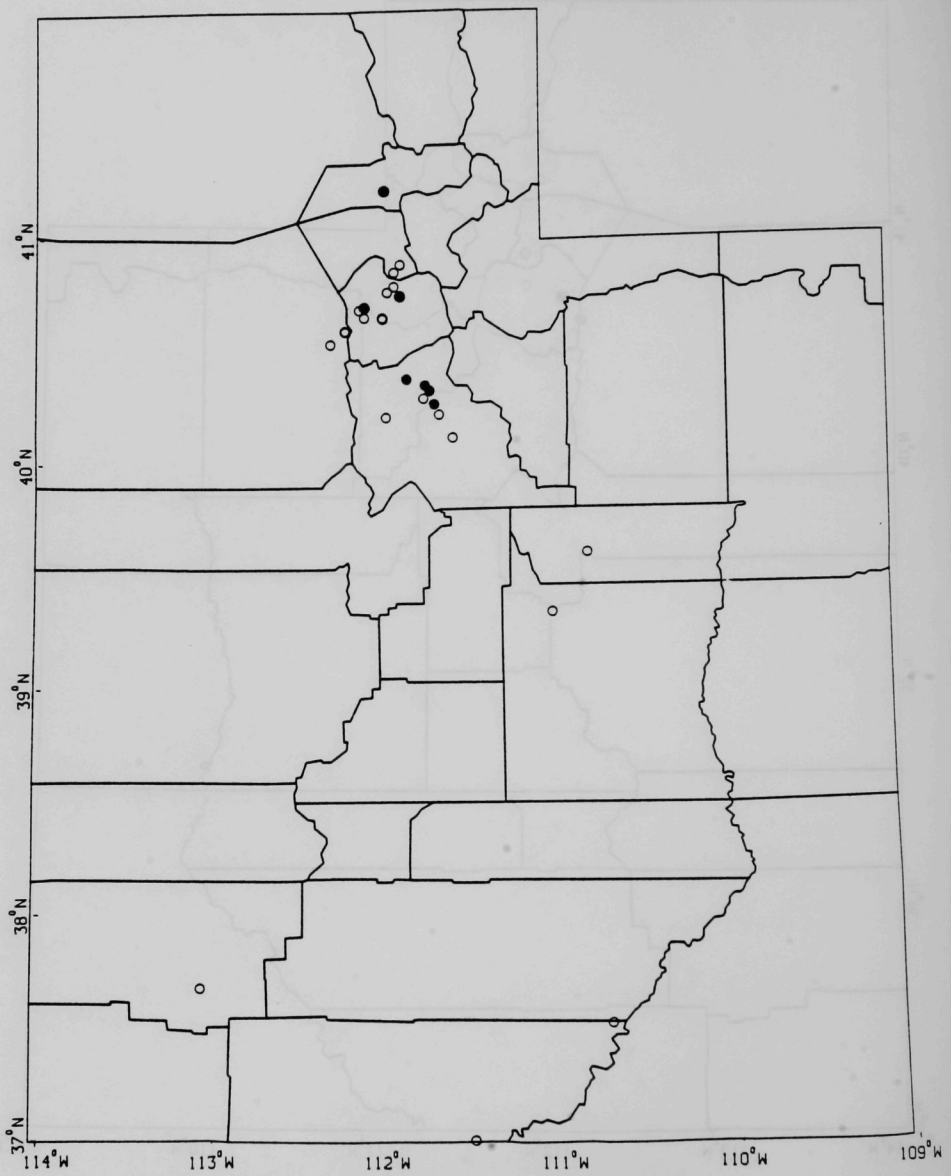


Fig. VIII.58. Utah: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

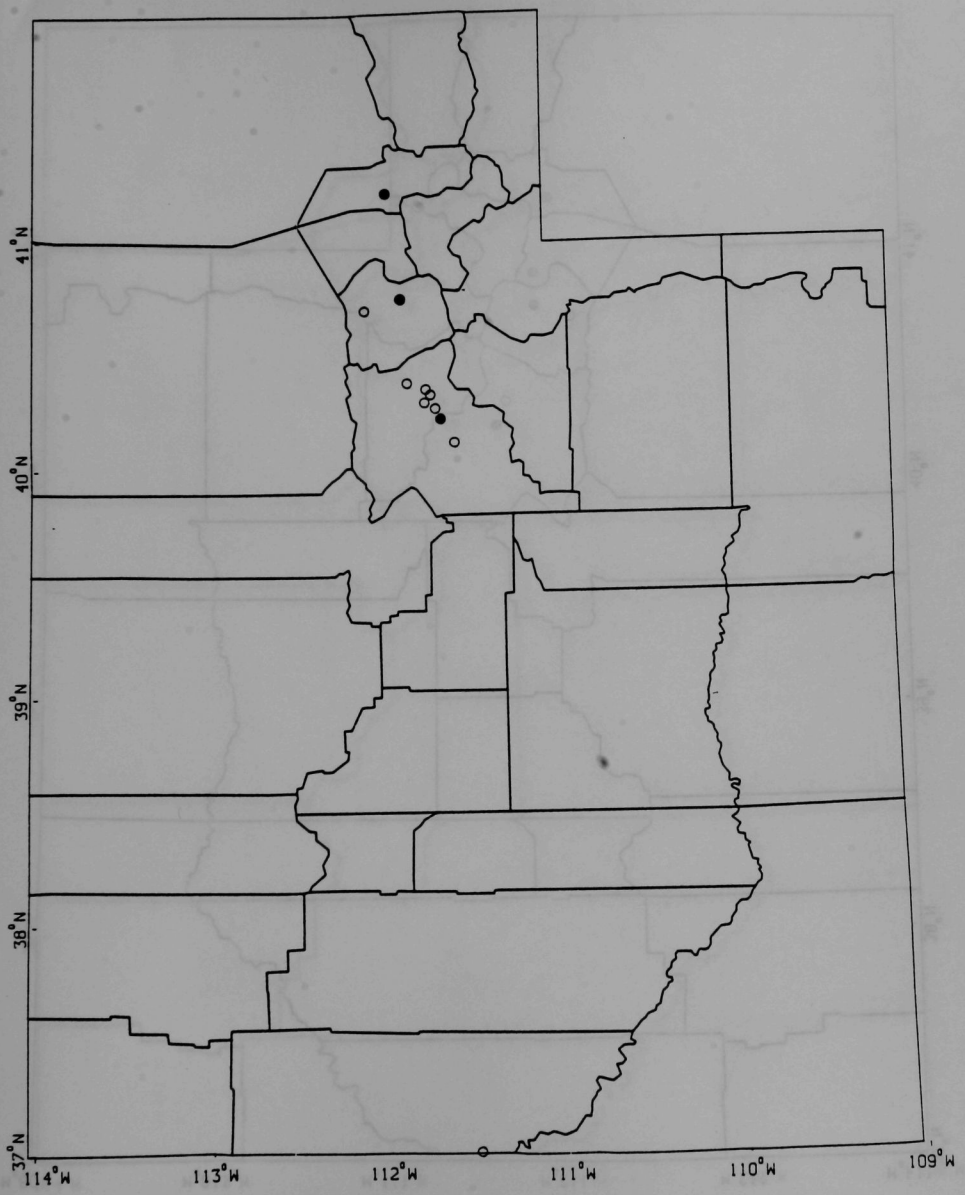


Fig. VIII.59. Utah: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

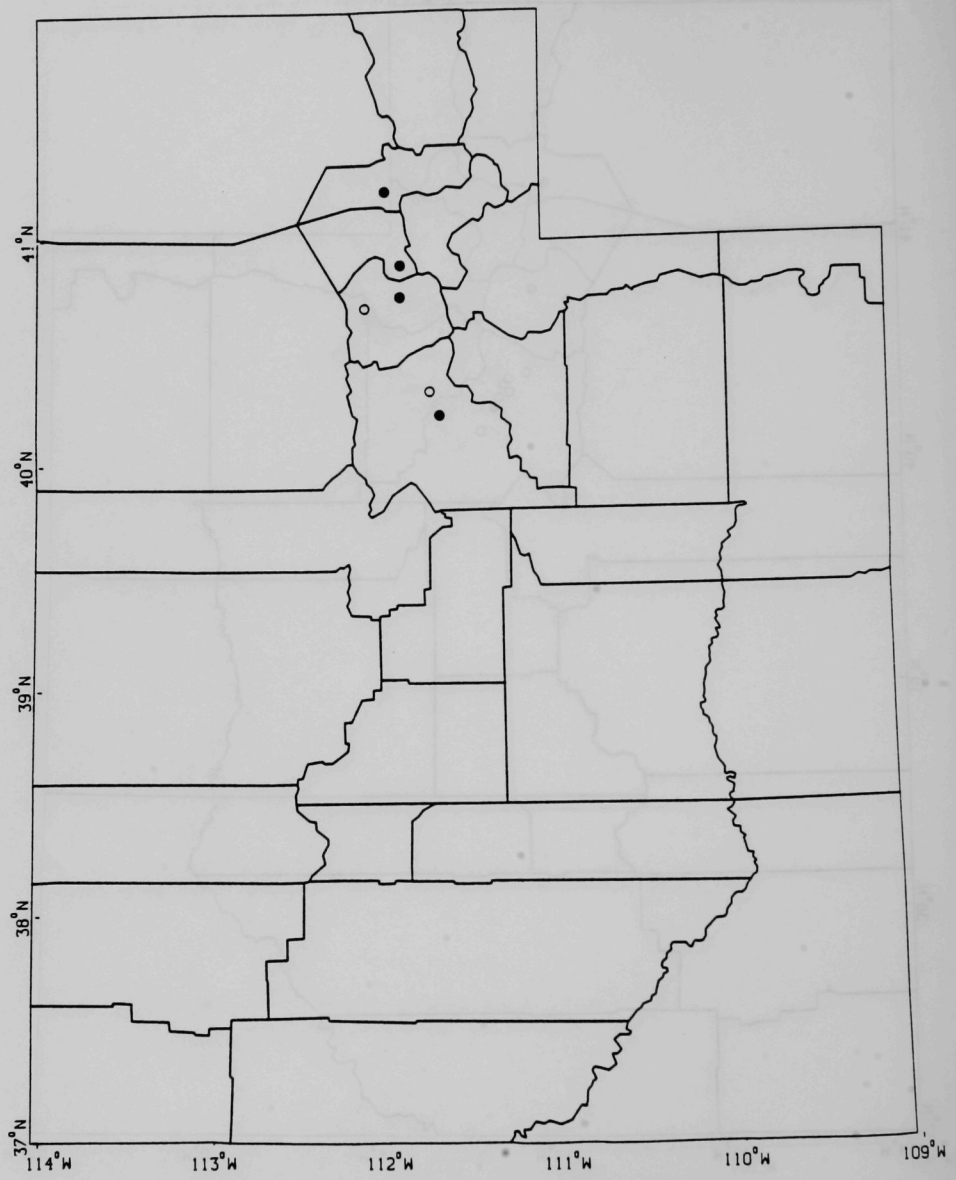


Fig. VIII.60. Utah: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

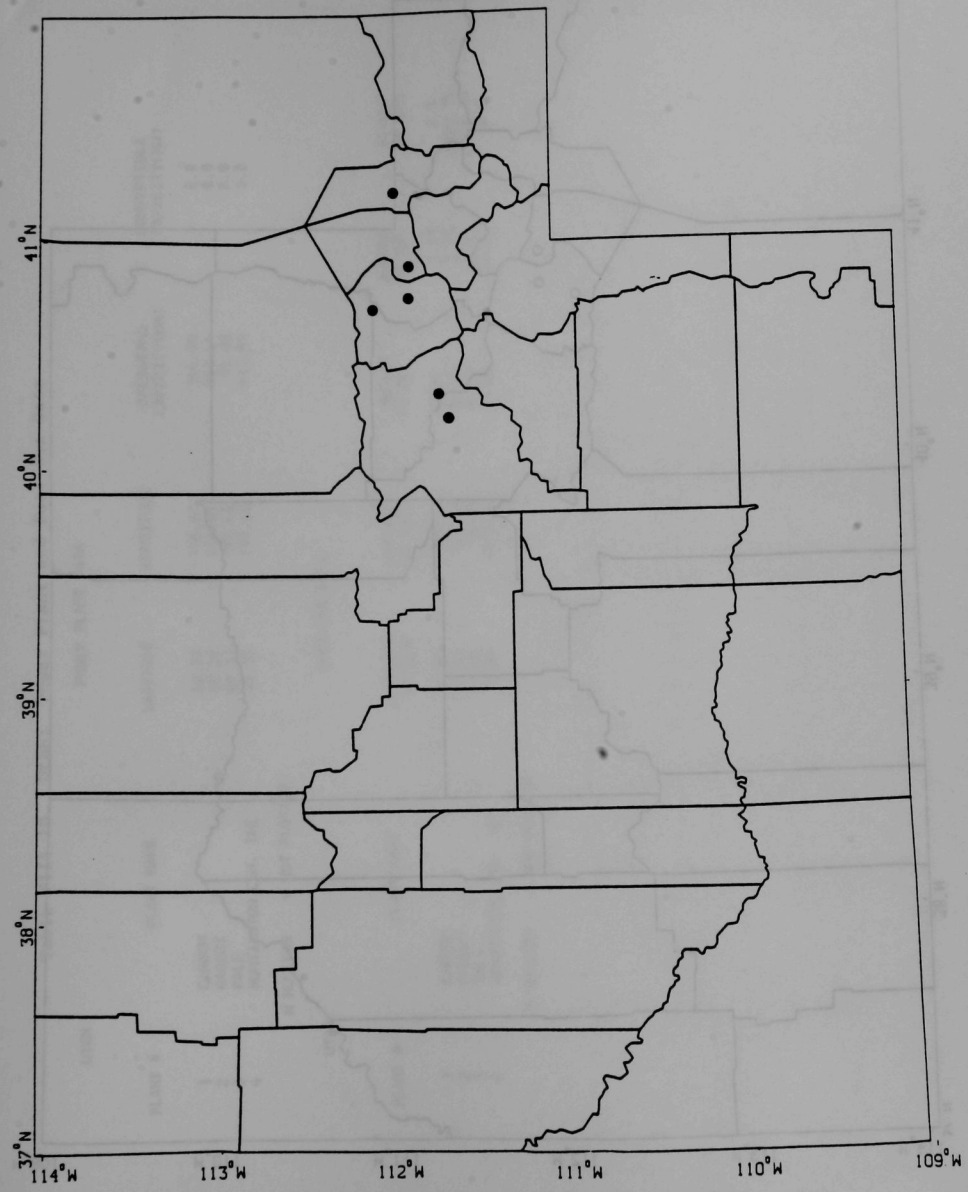


Fig. VIII.61. Utah: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

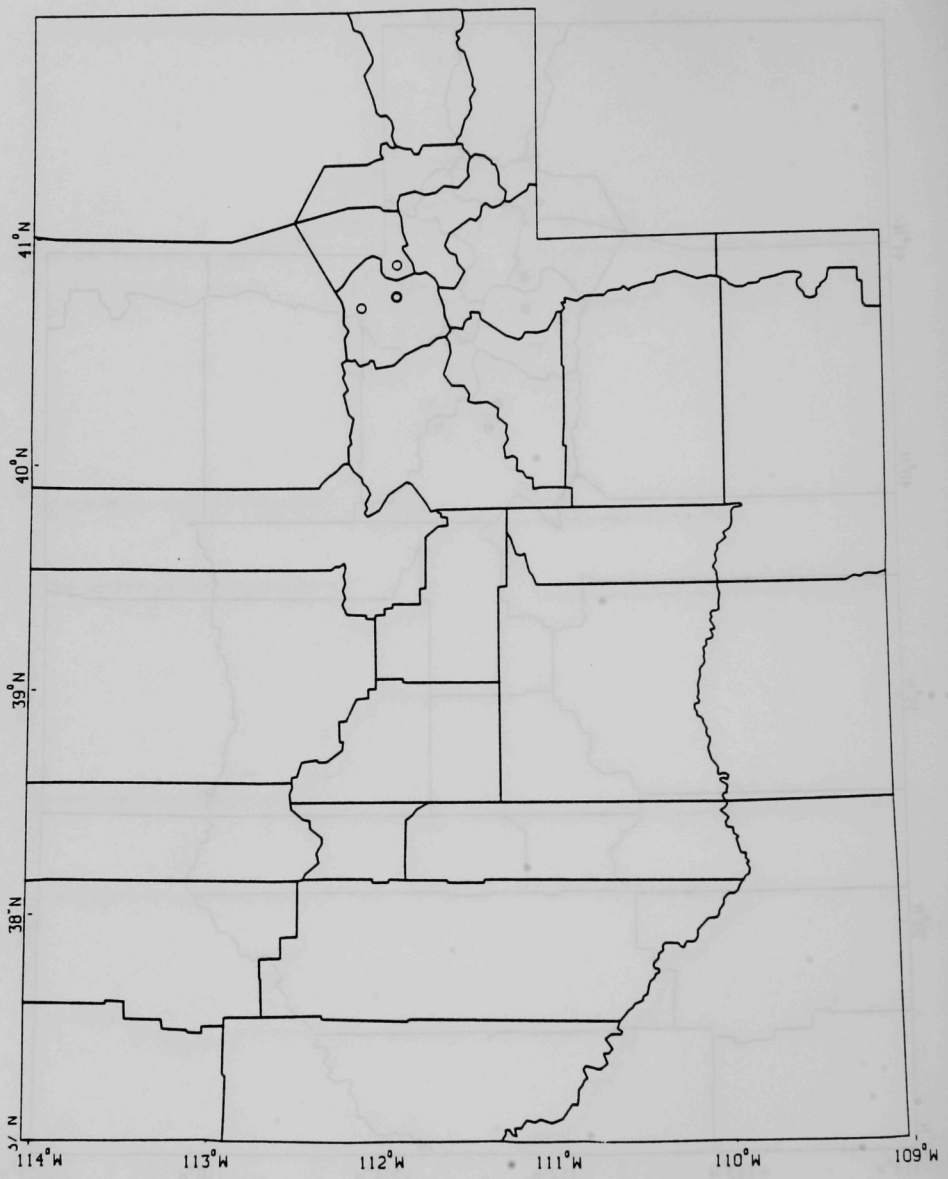


Fig. VIII.62. Utah: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.10. Utah: Power Plant and Fuel Use Data

UTAH

POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	CARBON	39.73	110.87	166.00	0.0
2	GADSBY	40.77	111.93	251.64	0.0
3	HALE	40.31	111.66	59.00	0.0
4	HUNTINGTON CAN. 1&2	39.38	111.03	411.00	0.0

N NUCLEAR * NOT PLOTTED

UTAH

FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	CARBON	0.50	440.10	0.20	2.03	0.0
2	GADSBY	0.50	427.10	0.20	3.05	2529.10
3	HALE	0.50	96.77	0.0	0.0	0.14
4	HUNTINGTON CAN. 1&2	0.50	1053.12	0.35	26.95	0.0

N NUCLEAR * NOT PLOTTED

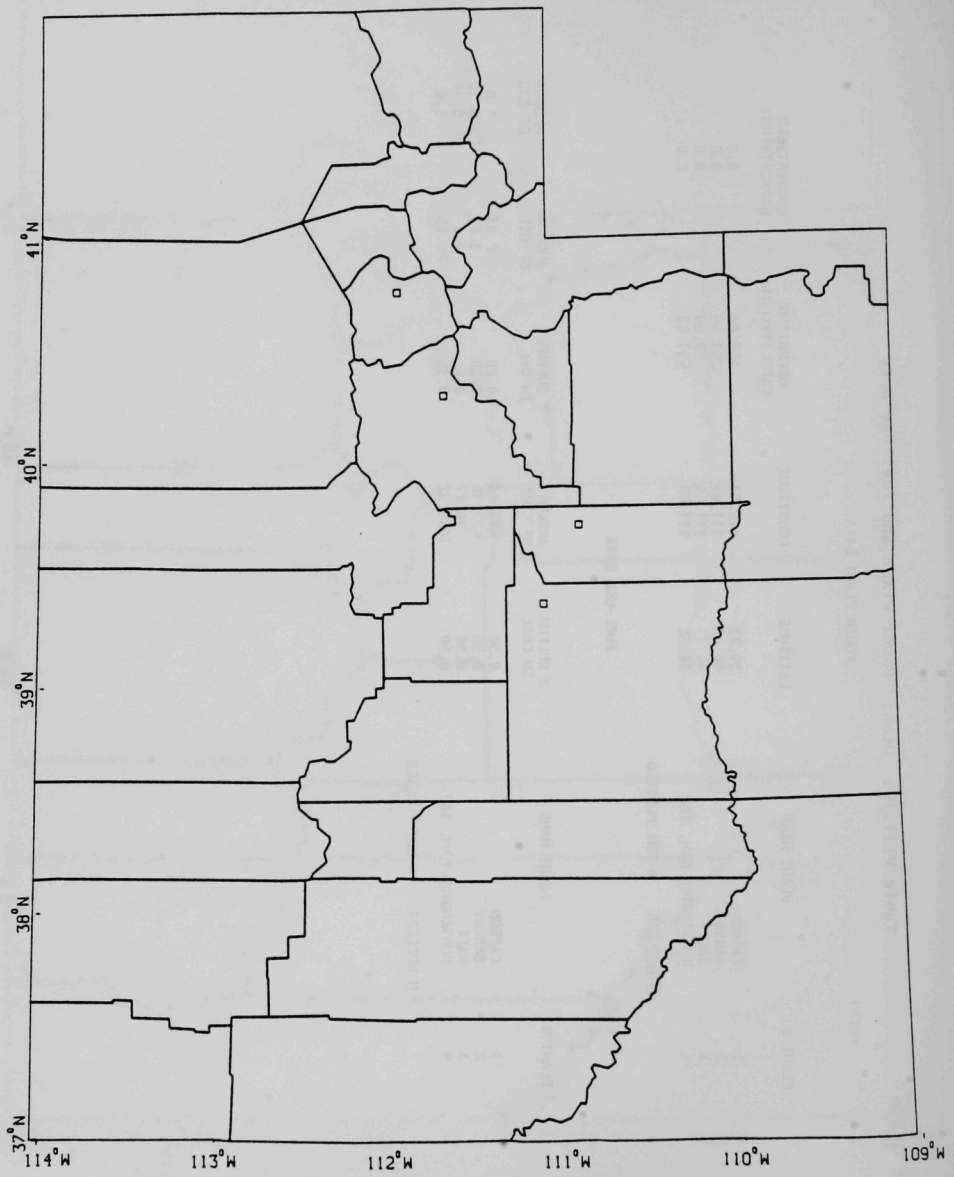


Fig. VIII 63. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

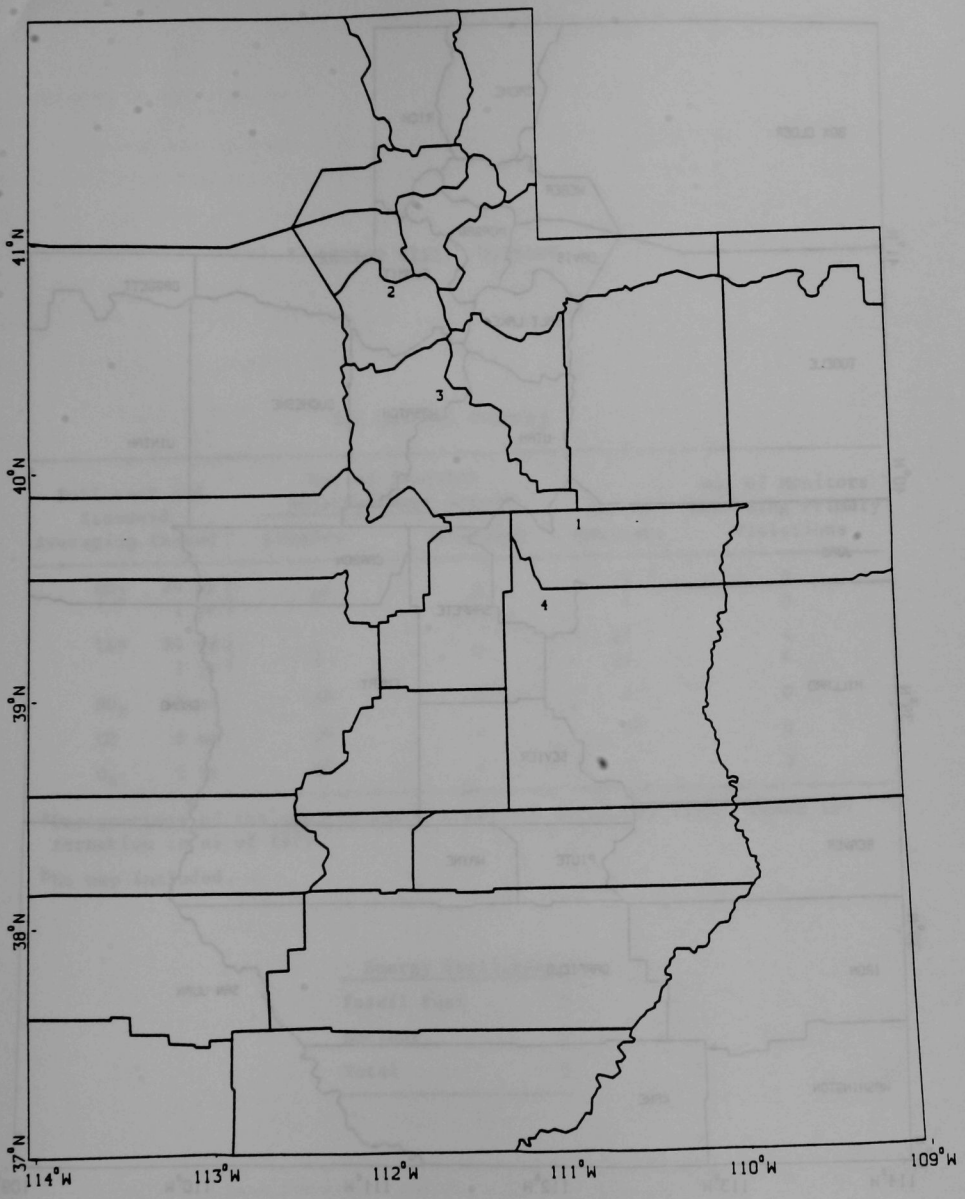


Fig. VIII.64. Power Plant Key (See Table VIII.10 for Identification and Fuel Use Data)

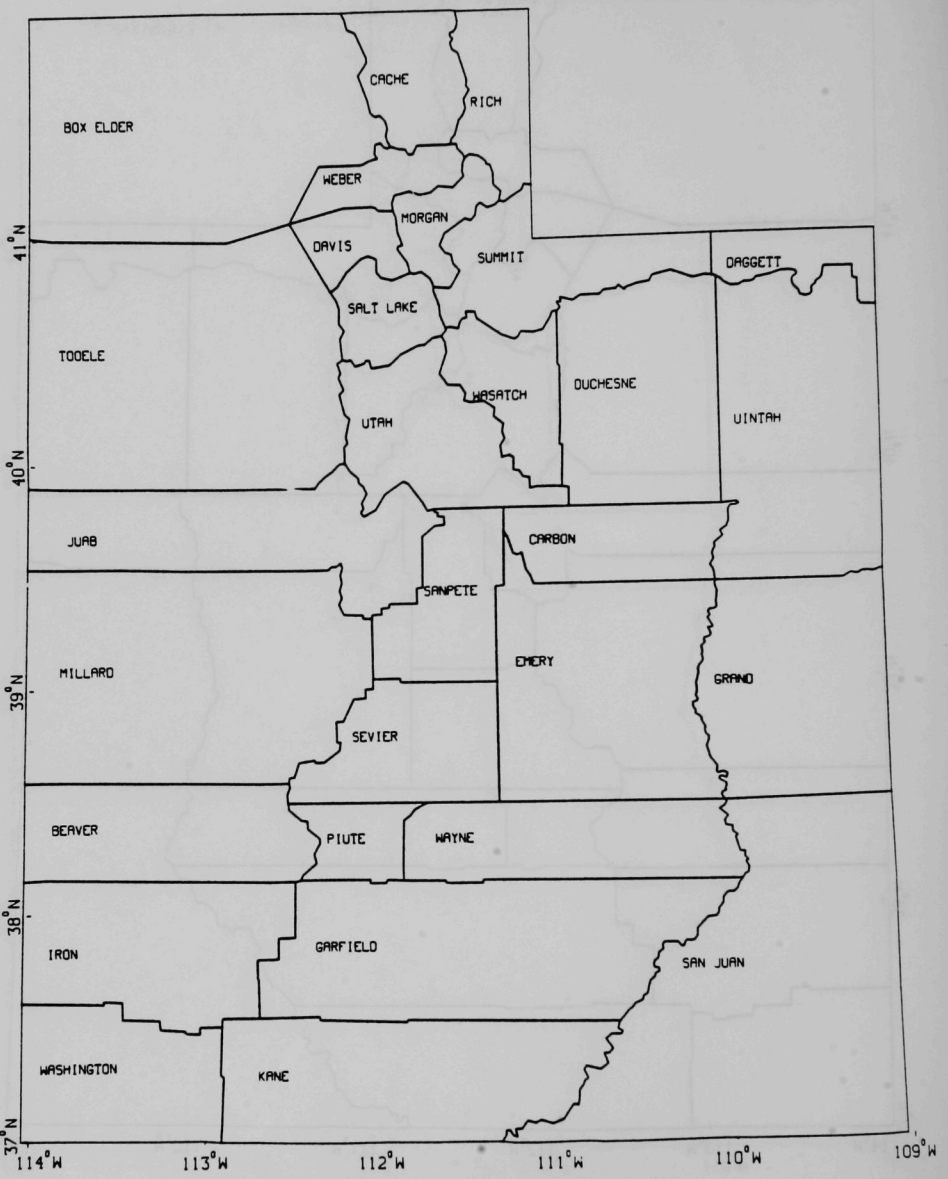


Fig. VIII.65. Utah: Key to Counties

REGION VIII: WYOMING

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	0[b]	0	9	0
	1 yr			5	0
TSP	24 hr	3	0	47	4
	1 yr			22	4
NO_x	1 yr	0[b]	-	2	0
CO	8 hr	0[b]	-	0[b]	0
O_x	1 hr	0[b]	-	1	0

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	5
Nuclear	0
Total	5

WYOMING (Official SIP, 2/79)

I. SOURCES OF THE PROBLEM

Wyoming has primary TSP nonattainment areas immediately surrounding three different stationary sources in northwestern Sweetwater County. Violations in one area are due to fugitive dust emissions from Stauffer Chemical Co. Fugitive emissions from Allied Chemical Co. (primarily from its trona stockpile and its coal stockpile) cause another area of violation. FMC Corp. has fugitive emissions from coal and trona stockpiles.

II. ATTAINMENT STRATEGIES (TSP only)

A. Point source emissions

1. Controls already required are RACT
2. Additional controls are not needed

B. Fugitive dust controls

1. Allied Chemical Co.

   a. Pave all heavily-travelled roads and clean them with a vacuum sweeper

   b. Reclaim the distressed area outside the fence or apply soil binders

   c. Either enclose the active coal stockpile or install a dust suppression system

   d. Immediately reduce equipment movement on periphery of the trona stockpile

2. FMC Corp.

   a. Coal stockpile

      - eliminate the coal stacker and stockpile by either enclosing the pile or unloading the railroad cars directly into the boiler silos
      - alternatively, utilize sprays, foams, and handling systems, together with a monitoring program to judge success

   b. Ore stockpiles: minimize free-fall distance from booms and install wind shroud

c. Loadout facilities (train or truck) must have hoods around product chutes and dust collectors

d. Pave frequently-traveled roads and vacuum sweep them; treat unpaved roads

e. Overflow chutes must empty into closed containers

3. Stauffer Chemical

a. Ore stockpile: variable boom and wind shroud

b. Loadout facilities (train or truck) must have hoods and dust collectors

c. Product silos must have dust collectors

d. Crusher area: housekeeping by vacuum system with dust collector - other measures if necessary

e. Overflow chutes must empty into closed containers

f. Pave frequently-traveled roads and treat unpaved ones with dust suppressants

g. Reclaim and treat distressed product piles and tailing pond dredgings with dust suppressants

III. NEW SOURCE REVIEW

No specific review procedures are set up to deal with the limited, source-specific nonattainment areas.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Sources constructed after 1/1/74

a. With heat input > 250 MM Btu/hr: 0.2 lb SO_2/MM Btu for coal

2. Sources contructed before 1/1/74

a. Where 250 < heat input < 2500 MM Btu/hr: 1.2 lb SO_2/MM Btu

b. Where 250 < heat input < 5000 MM Btu/hr: 0.5 lb SO_2/MM Btu

c. With heat input > 5000 MM Btu/hr: 0.3 lb SO_2/MM Btu

B. TSP

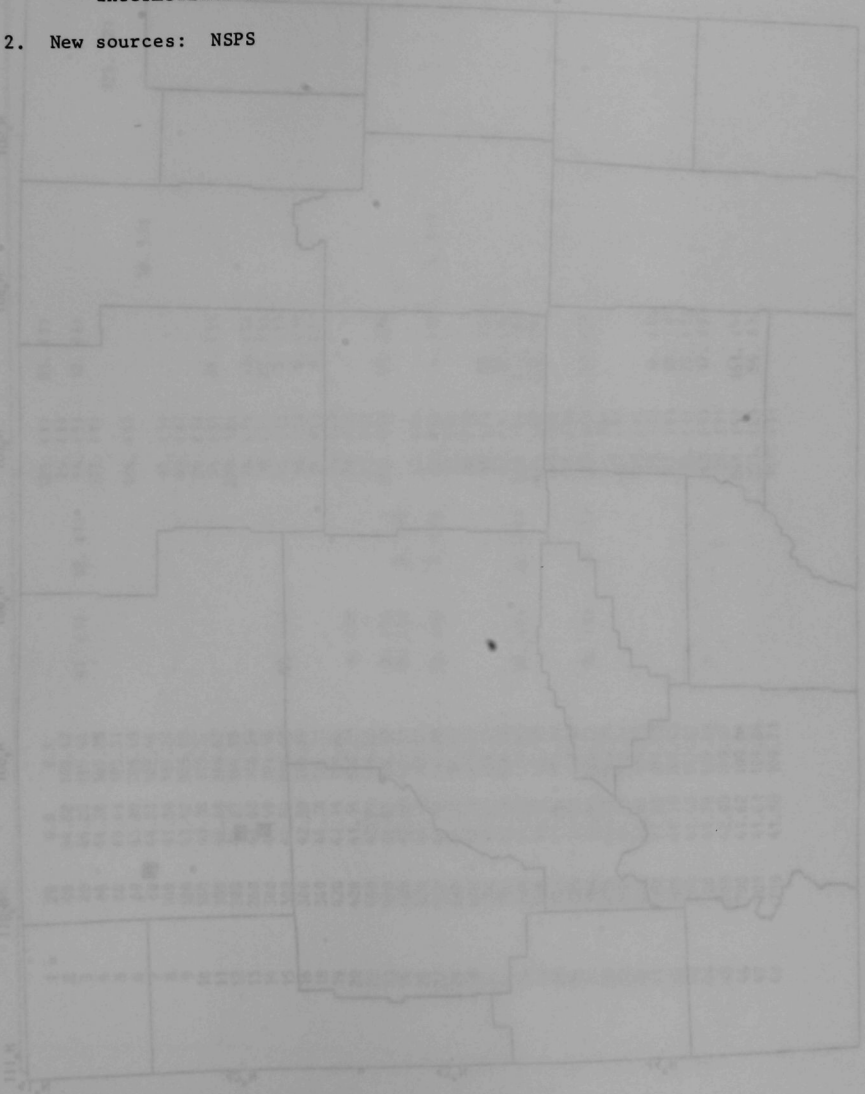
1. Existing coal-burning sources

a. With heat input $\leq$ 10 MM Btu/hr: 0.6 lb PM/MM Btu

b. With heat input > 10,000 MM Btu/hr: 0.18 lb PM/MM Btu

c. Interpolate between these limits for sources of intermediate size

2. New sources: NSPS



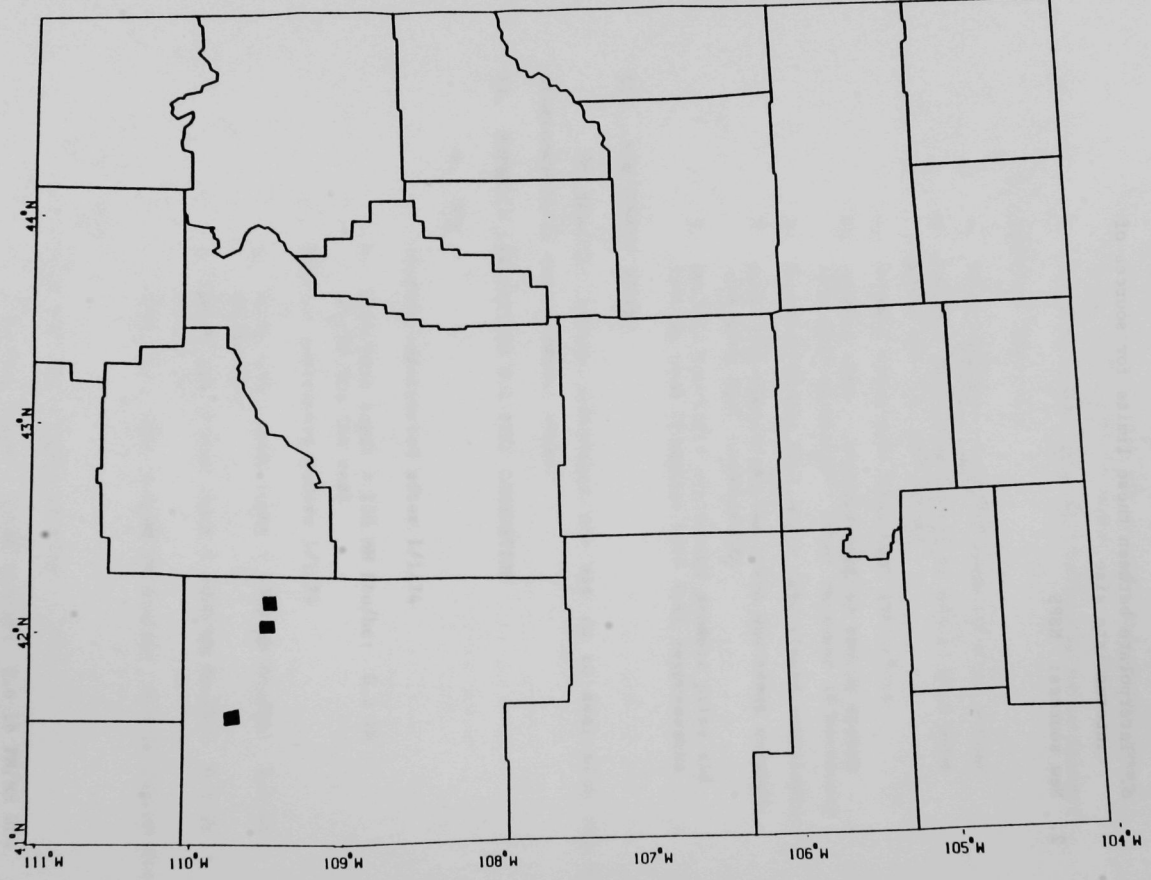


Fig. VIII.66. Wyoming: TSP Nonattainment Areas as Designated May 1979

Table VIII.11. Wyoming: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1 *	20	0.0	0.0			123. (1)	53. (1)			
2	40	44.82	108.42			94. (1)				
3	80	44.23	105.46	41. (1)	12. (1)	54. (1)	12. (1)			
4	80	44.28	105.25			123. (1)				
5	80	43.61	105.31							129. (2)
6	80	43.80	105.48			124. (1)				
7	80	44.23	105.46					10. (1)		
8	100	41.80	107.20			41. (1)				
9	180	43.42	105.03			49. (1)				
10	180	43.38	105.37			29. (1)				
11	180	42.68	105.67			74. (1)	31. (1)			
12	200	44.27	104.95			219. (2)				
13	260	43.03	108.39			76. (1)	33. (1)			
14	300	41.99	104.16			70. (1)	22. (1)			
15	300	42.59	104.59	52. (1)		43. (1)	7. (1)			
16	300	42.59	104.59			48. (1)	9. (1)			
18	360	44.38	106.71			34. (1)	9. (1)			
19	420	41.14	104.82			74. (1)				
20	420	41.14	104.82	8. (1)		73. (1)				
22	440	42.79	110.93			51. (1)				
23	460	42.85	106.32	8. (1)		100. (1)	45. (1)			
24	460	42.85	106.32	15. (1)	5. (1)					
26	520	44.55	109.07			67. (1)				
27	520	44.98	110.70	10. (1)	3. (1)	27. (1)	4. (1)	3. (1)		
29	660	44.60	106.90			33. (1)				
30	680	42.78	109.67			22. (1)				
31	700	41.62	109.83			99. (1)	28. (1)			
32	700	41.59	109.96			87. (1)	27. (1)			
33	700	41.62	109.80	77. (1)	22. (1)	509. (4)	130. (4)			
34	700	41.62	109.80			624. (4)	232. (4)			
35	700	41.55	109.19			136. (1)				
36	700	41.55	109.19			111. (1)				
37	700	41.59	109.22	10. (1)	3. (1)	207. (2)	90. (3)			
38	700	41.60	109.74			468. (4)				
39	700	41.59	109.77			41. (1)				
40	700	41.60	109.73			173. (1)				
41	700	41.65	109.93			45. (1)	16. (1)			
42	700	41.70	109.93			52. (1)	18. (1)			
43	700	41.65	109.87			56. (1)	20. (1)			
44	700	41.70	109.86			63. (1)	17. (1)			
45	700	42.05	109.47			39. (1)				
46	700	41.62	109.81			841. (4)	161. (4)			
47	700	41.61	109.80			223. (2)	56. (1)			
49	700	41.58	109.71			101. (1)				

Table VIII.11. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
50	700	41.60	109.75			142. (1)				
52	700	41.52	109.47			115. (1)				
53	720	43.64	110.63			31. (1)				
54	800	44.17	107.19			12. (1)				
55	820	43.88	104.32	65. (1)		135. (1)	15. (1)			
56	820	43.67	104.88			86. (1)				

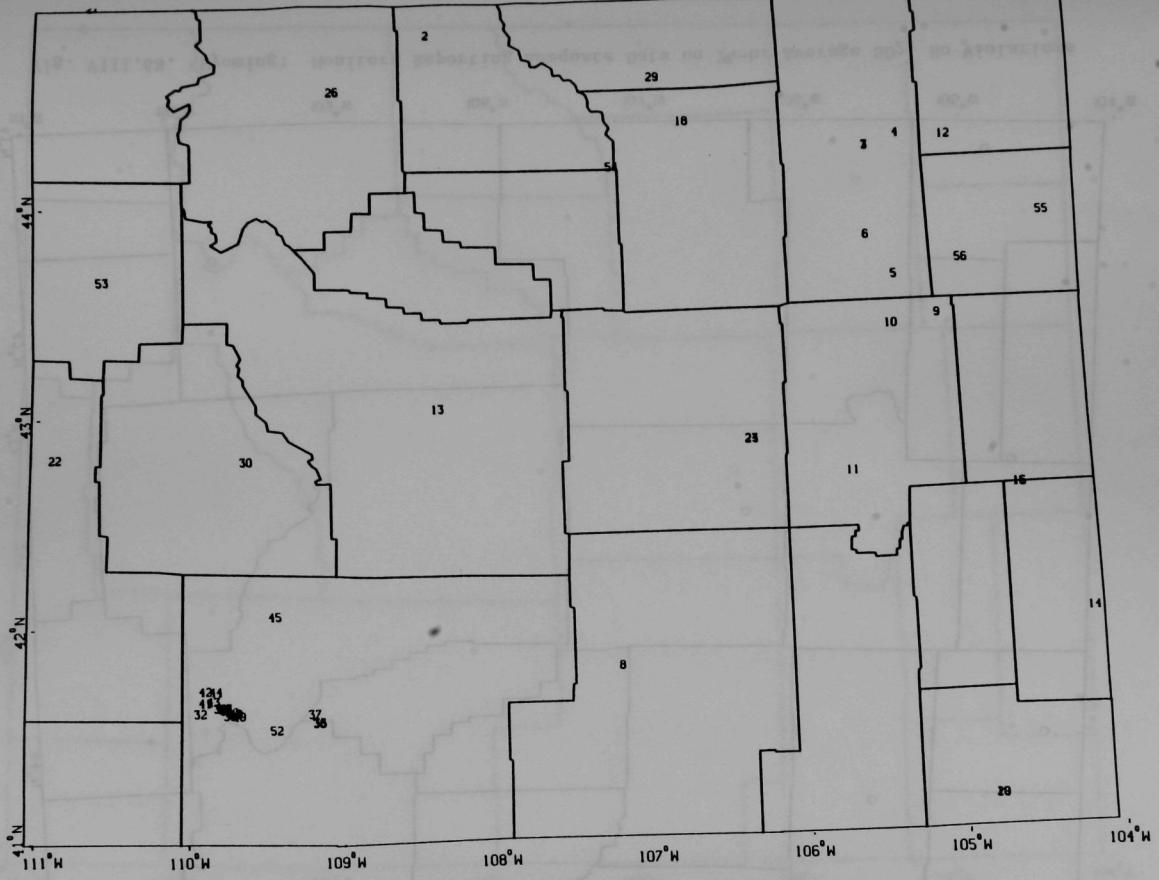


Fig. VIII.67. Wyoming: Locations of SAROAD Monitors
(See Table VIII.11 for Monitor Numbers)

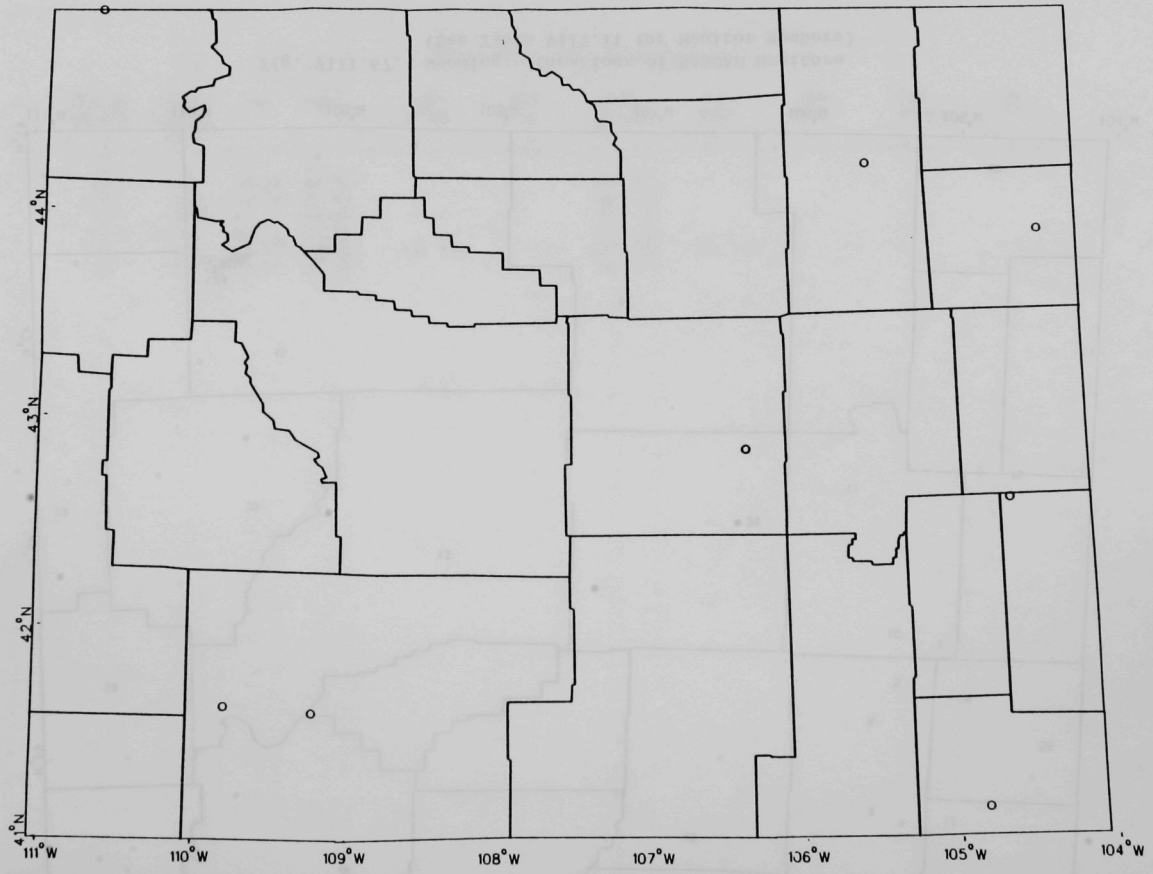


Fig. VIII.68. Wyoming: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

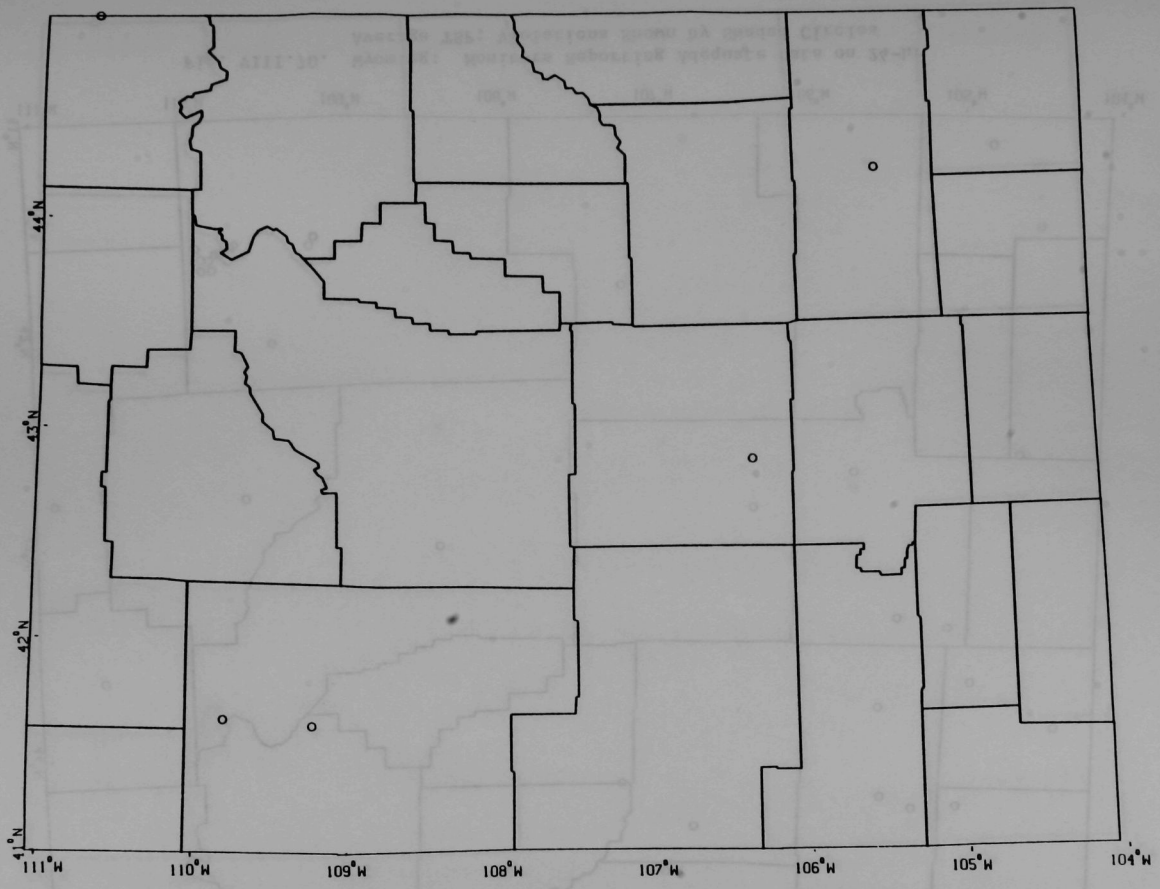


Fig. VIII.69. Wyoming: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

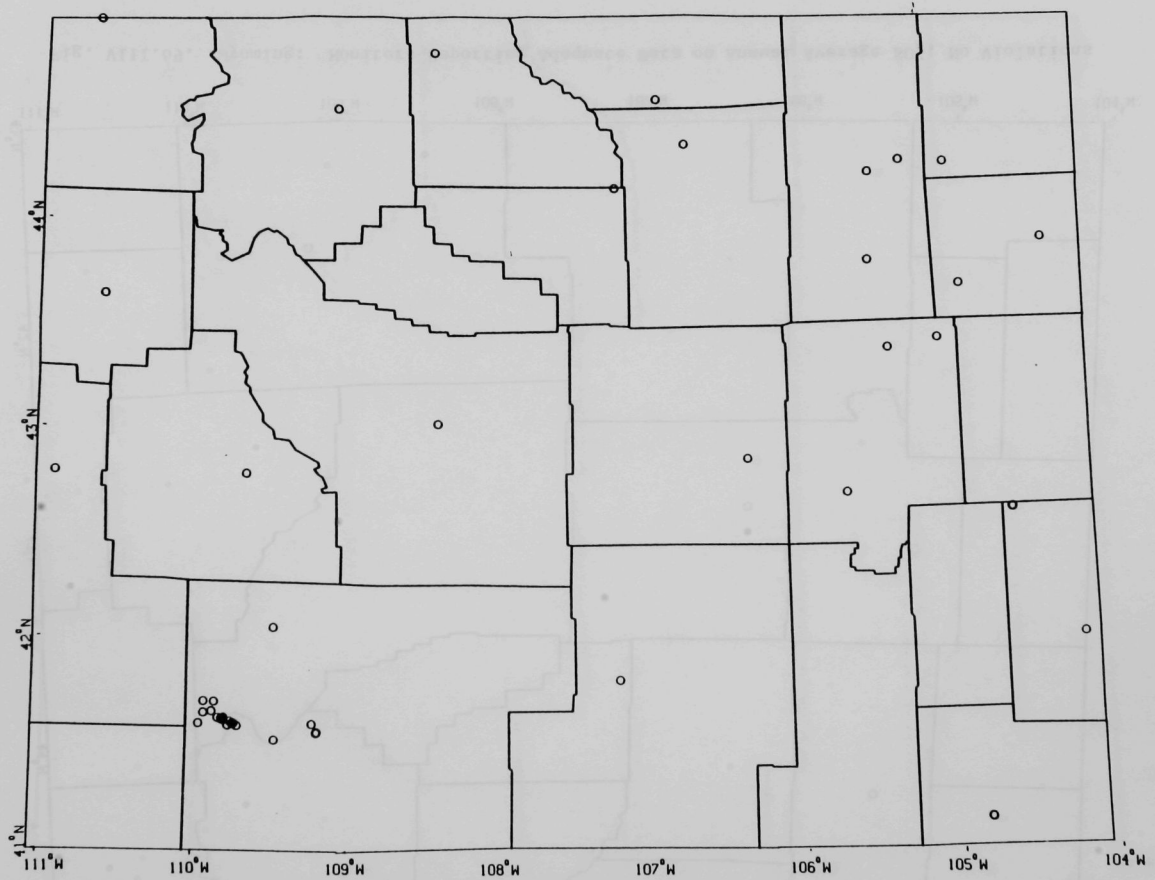


Fig. VIII.70. Wyoming: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

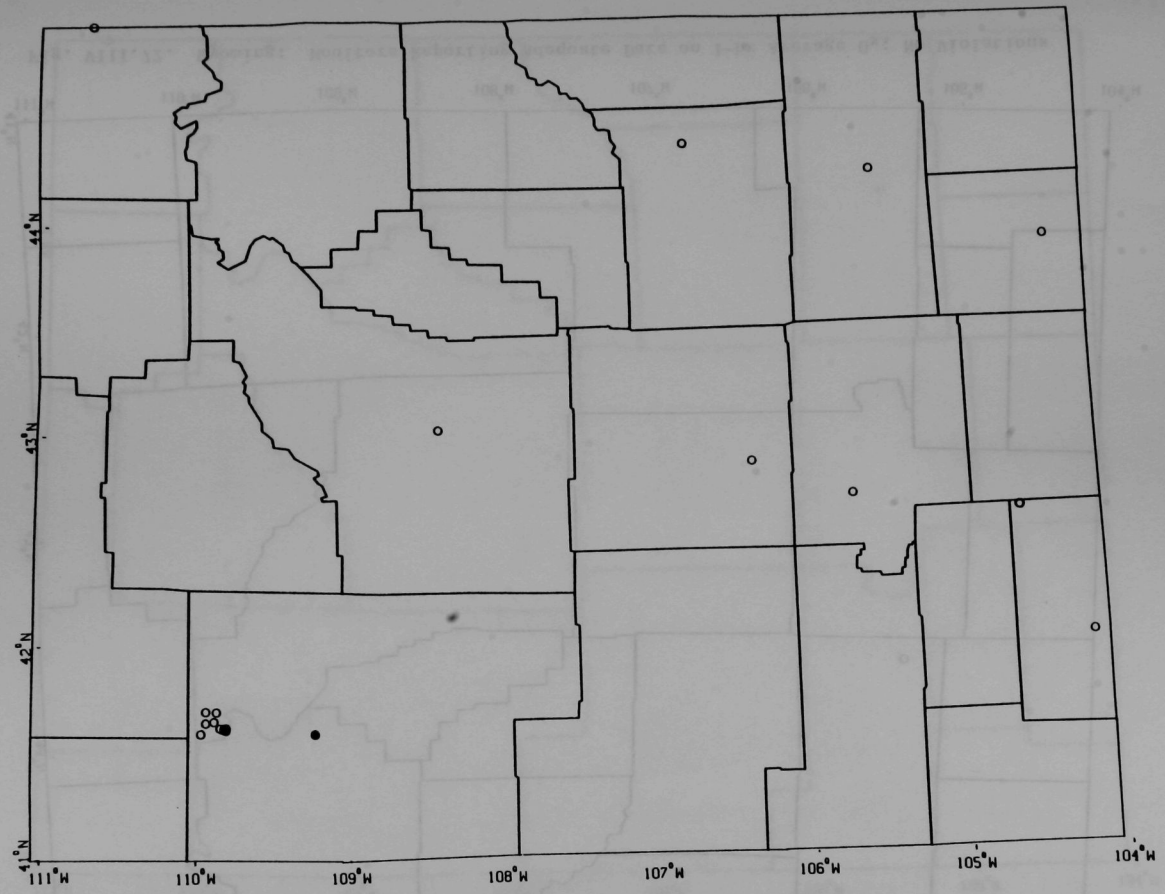


Fig. VIII.71. Wyoming: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

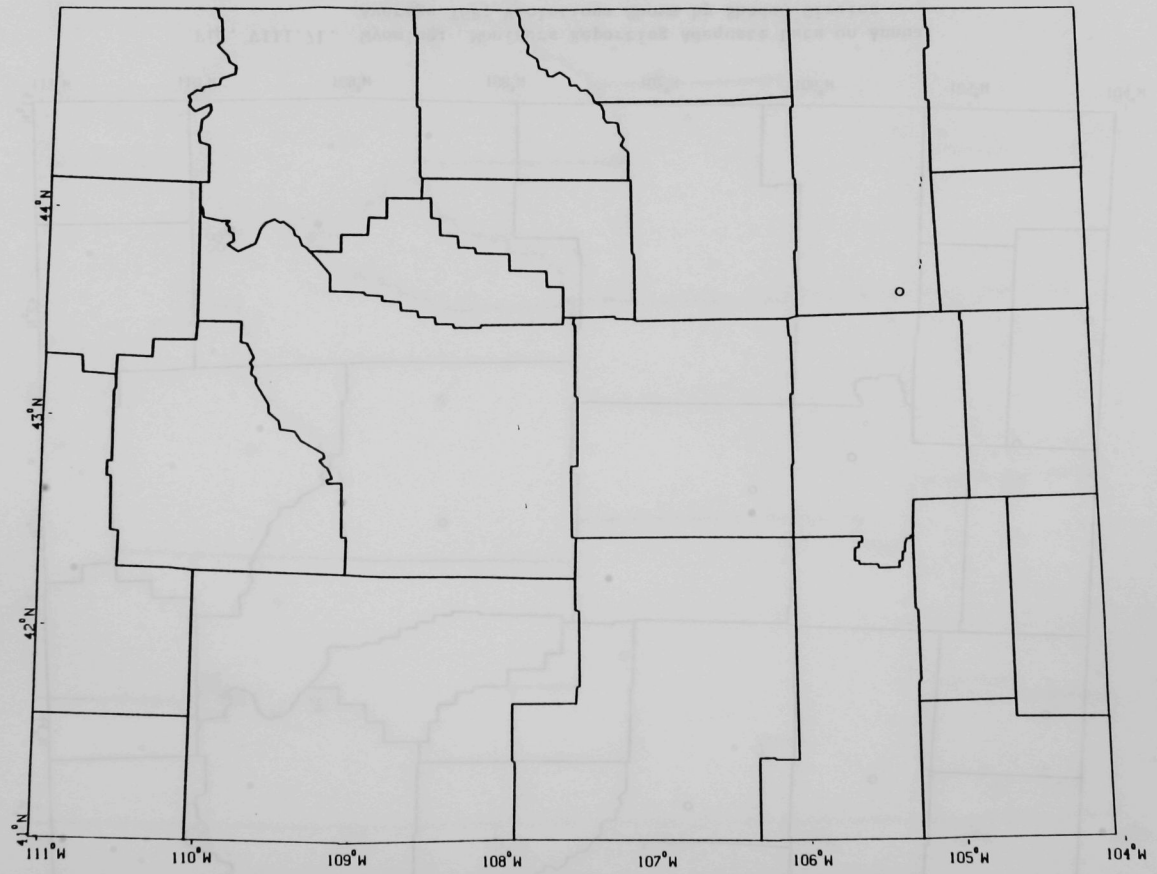


Fig. VIII.72. Wyoming: Monitors Reporting Adequate Data on 1-hr Average O_x; No Violations

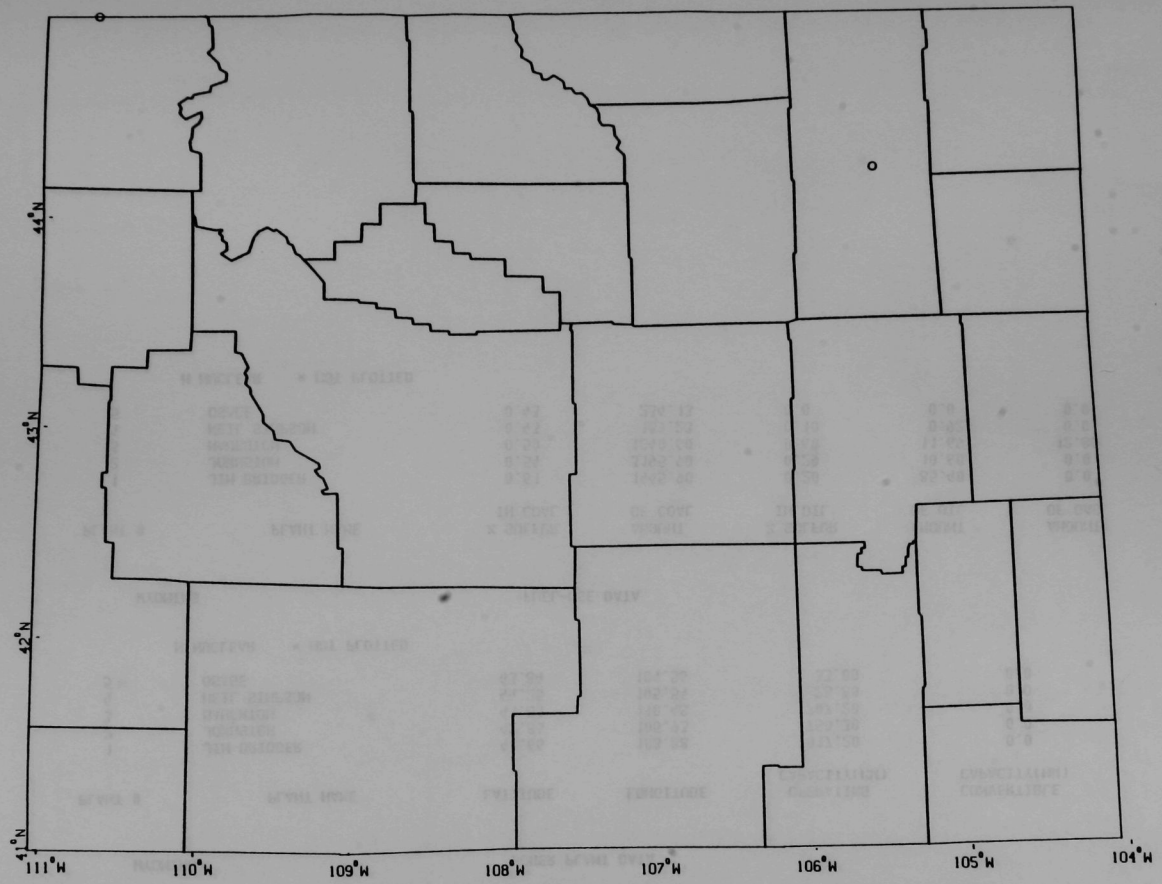


Fig. VIII.73. Wyoming: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table VIII.12. Wyoming: Power Plant and Fuel Use Data

WYOMING — POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	JIM BRIDGER	41.66	108.88	1017.20	0.0
2	JOHNSTON	42.86	105.93	750.30	0.0
3	NAUGHTON	41.81	110.43	707.20	0.0
4	NEIL SIMPSON	44.25	105.54	28.80	0.0
5	OSAGE	43.84	104.56	33.00	0.0

N NUCLEAR * NOT PLOTTED

WYOMING — FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	JIM BRIDGER	0.61	1445.90	0.20	85.40	0.0
2	JOHNSTON	0.54	3195.90	0.29	10.60	0.0
3	NAUGHTON	0.50	1340.60	0.60	11.69	12.86
4	NEIL SIMPSON	0.43	189.23	0.10	0.92	0.0
5	OSAGE	0.43	234.13	0.0	0.0	0.0

N NUCLEAR * NOT PLOTTED

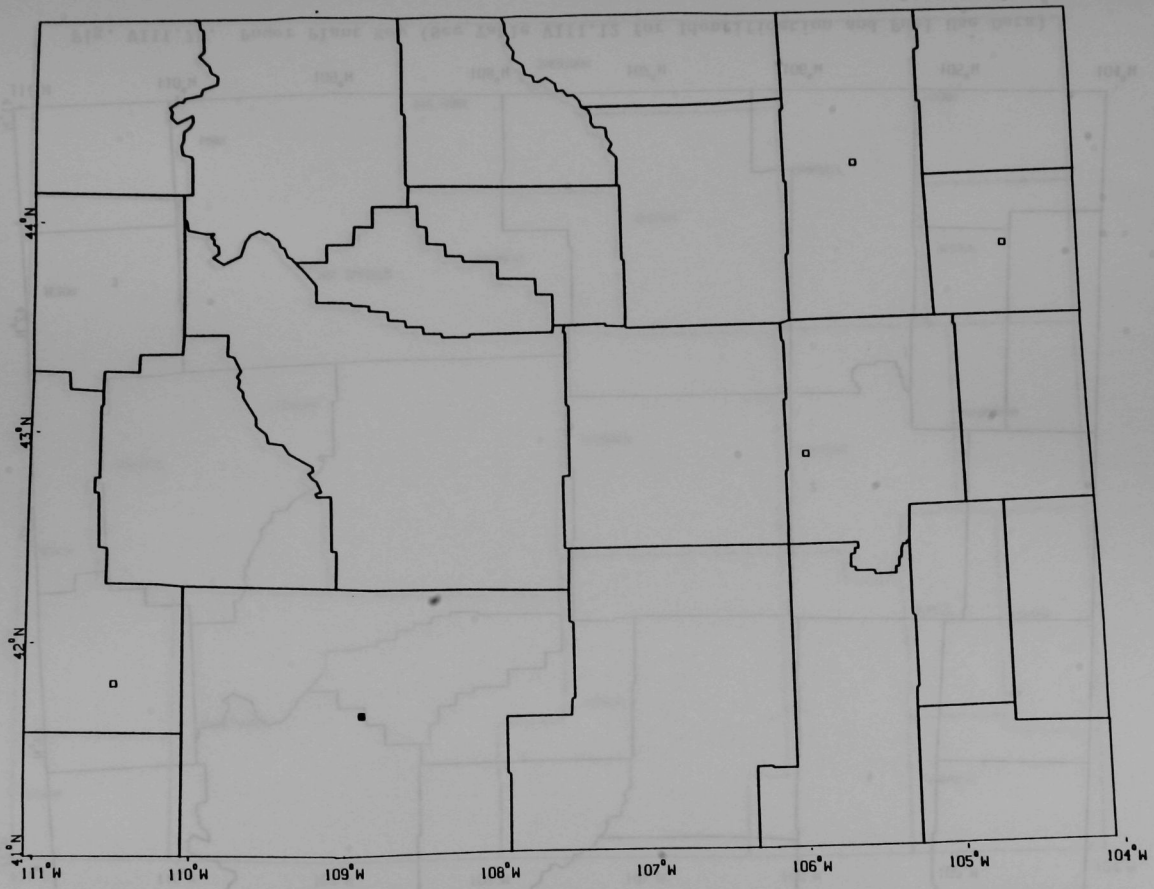


Fig. VIII 74. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

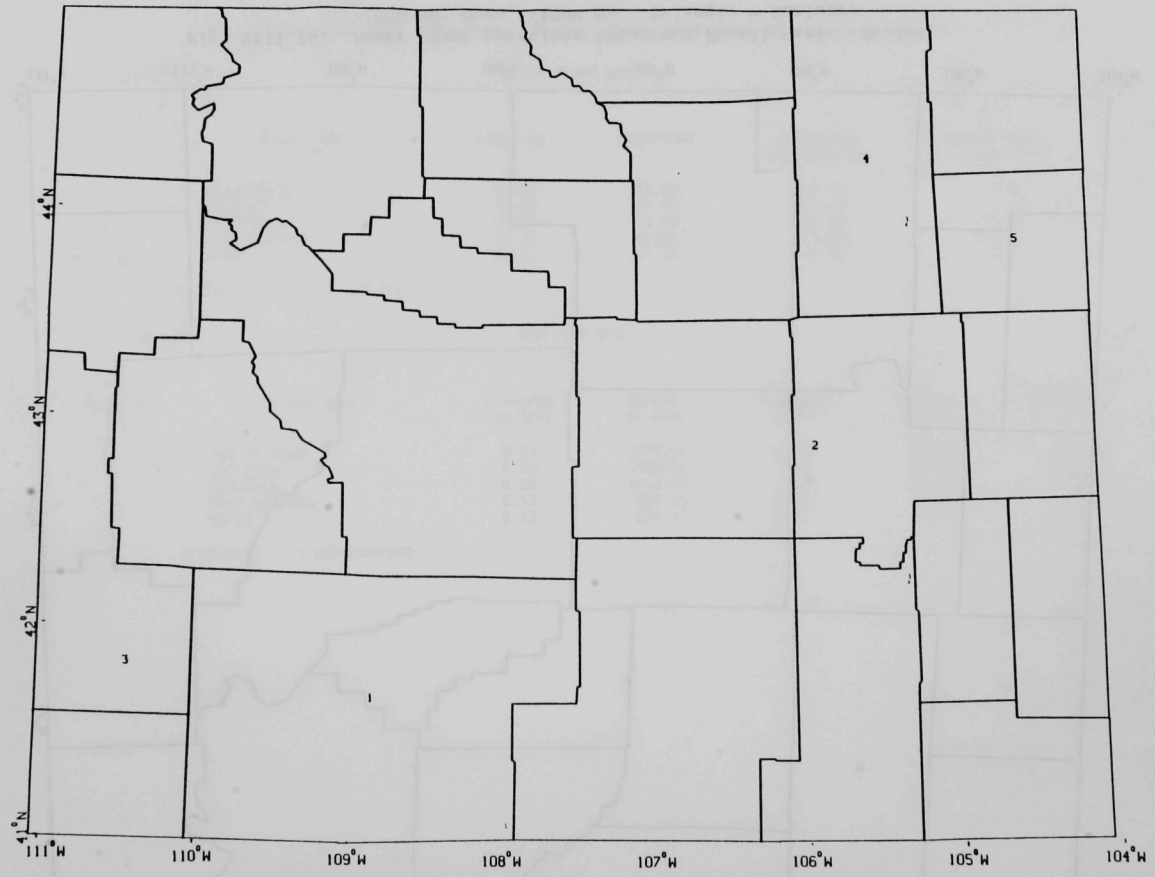


Fig. VIII.75. Power Plant Key (See Table VIII.12 for Identification and Fuel Use Data)

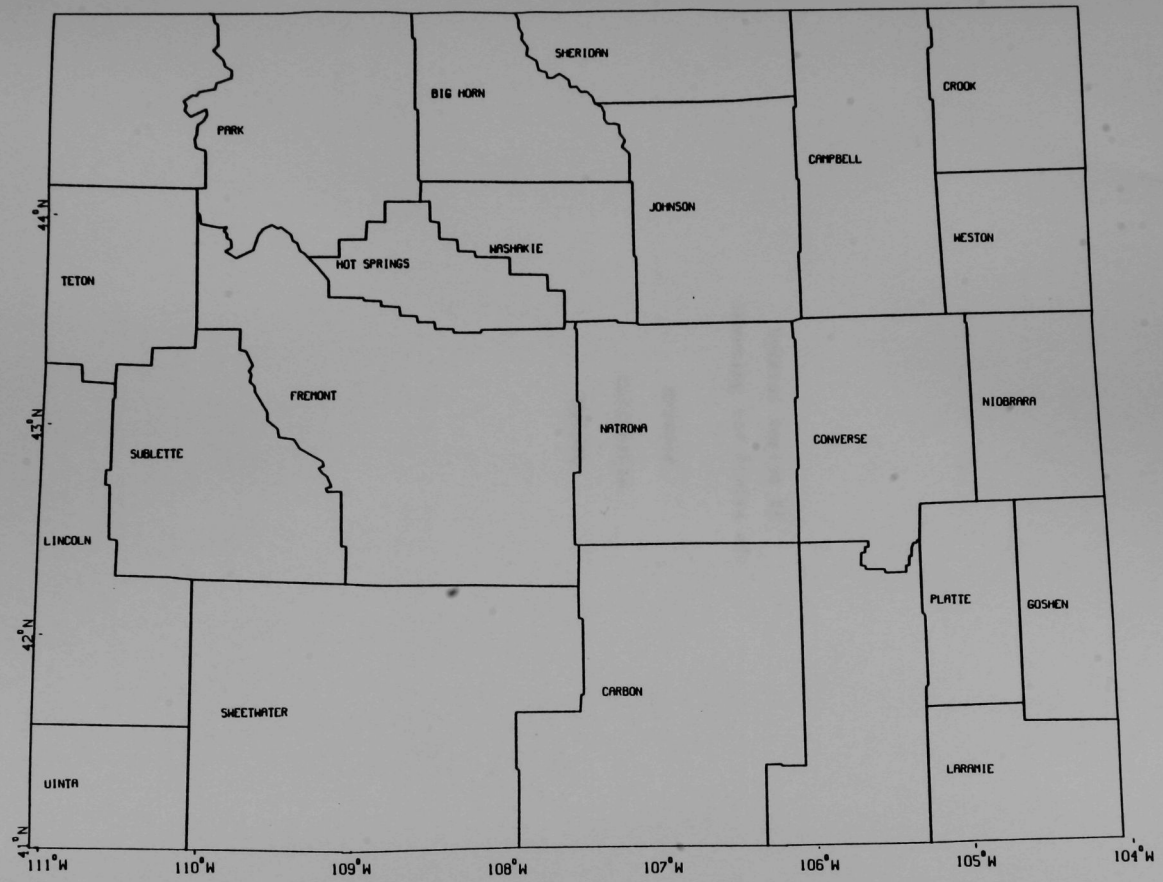


Fig. VIII.76. Wyoming: Key to Counties

Federal Region IX
Covering the States of:

Arizona

California

Nevada

REGION IX: ARIZONA

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	6	0	28	9
	1 yr			7	5
TSP	24 hr	6	2	68	17
	1 yr			47	21
NO_x	1 yr	0[b]	-	1	0
CO	8 hr	2	-	14	7
O_x	1 hr	2	-	10	8

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	12
Nuclear	1
Total	13

ARIZONA (Official SIP, 4/79)

I. SOURCES OF THE PROBLEM

Arizona is a rapidly growing state that has some of the air quality problems of major urban centers, in addition to the problems associated with its traditional industry, metals and mineral processing. Air basins surrounding Phoenix and Tucson fail to meet national standards for TSP, ozone, and CO, and smaller areas are in nonattainment for TSP and SO_2. In Tucson, sources of PM have been identified as follows: dust from vehicle traffic on roads with unpaved shoulders, 40%; vehicle traffic on unpaved roads, 26%; vehicle traffic over curbed streets, 12%; and emissions from construction activity, 10%. Point sources account for under 10% of locally-produced TSP concentrations. Phoenix PM sources are similar. In the smaller TSP nonattainment areas around Ajo, Douglas, Hayden, and Miami, copper smelters produce significant TSP emissions. In Joseph City and Page, power plants contribute the bulk of man-made TSP, and in Paul Spur a lime plant is the significant point source. All TSP nonattainment areas are subject to high concentrations of natural and agricultural dust due to arid conditions.

In the six SO_2 nonattainment areas, (Ajo, Douglas, Hayden, Miami, San Manuel, and Morenci) copper smelters are the chief cause of violations.

Mobile sources, primarily automobiles, contribute about 74% of the hydrocarbon precursors to ozone in Maricopa County (Phoenix) and 79% in Pima County (Tucson). Of the major stationary sources, the marketing of petroleum products and organic solvent users are the greatest VOC contributors, about 8% and 5% of the total, respectively. Miscellaneous stationary sources account for the remainder. Over 95% of carbon monoxide emissions can also be traced to motor vehicles.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Greater sulfur extraction from smelting process for conversion to sulfuric acid
2. SO_2 emissions limitation regulations at smelters
3. Stacks at level consistent with good engineering practice

B. TSP

1. The major urban areas (Phoenix, Tucson)

   a. Reasonably Available Control Technology (RACT) already required for traditional (point) sources

      - Sources emitting over 75 tons of PM/year are regulated by the state
      - Sources emitting under 75 tons of PM/year are regulated by the county

   b. RACT for industrial fugitive process emissions

   c. Study, evaluation, and implementation of controls on nontraditional sources, including pilot programs

      - Road and shoulder paving
      - Interim chemical stabilization of shoulders
      - Eliminate creation of new dirt roads by wildcat subdividers
      - Vegetation of exposed roadway soils
      - Reduced construction emissions
      - Increased and improved street sweeping

2. The smaller areas

   a. RACT for stack emissions from smelters, power plants, and mineral processors

   b. RACT for industrial fugitive emissions from large sources

   c. Some road paving, shoulder stabilization, and other fugitive dust control measures

C. O_x

1. Phoenix and Tucson areas

   a. Projected to attain NAAQS by 1985 by:

      - Federal Motor Vehicle Emissions Control Program
      - inspection and maintenance of vehicles
      - RACT for petroleum marketing and solvent use, including two-stage vapor recovery regulation
      - RACT for other stationary sources, in accordance with control technique guidances (e.g., surface coating; reduction of cutback asphalt use)

- traffic flow improvements
- mass transit improvements
- land use planning to minimize sprawl
- voluntary carpooling and staggered work hours

D. CO (end of 1982 attainment)

1. The ozone transportation strategies
2. Traffic flow improvements at specific hotspots (congested intersections)

III. NEW SOURCE REVIEW

Arizona will use an emissions offset policy in the permit program for new sources in nonattainment areas. All new sources are required to obtain a permit. Minor sources (under 100 tons/year) may be issued permits by the counties without offsets being required. Major sources will be granted permits through the state after meeting LAER, other-source compliance, and offset requirements.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2 -- the emission rate is the same as that in the SIP before revision except that the applicable date for the determination have been delayed.

1. Sources constructed before 5/30/72, using low-sulfur oil or coal

   a. 1.0 lb SO_2/MM Btu, 3 hour average

2. Sources constructed after 5/30/72, using low-sulfur oil or coal:

   a. 0.80 lb SO_2/MM Btu, 3 hour average

3. All existing sources, using high sulfur oil:

   a. 2.2 lb SO_2/MM Btu, 3 hour average

4. High sulfur oil can only be used if the owner of the source demonstrates that low-sulfur oil is not available and that NAAQS will not be violated. Low-sulfur oil is defined as having $< 0.9\%$ sulfur content.

B. TSP -- The emission rate is the same as in the previous SIP but the heat input rate for determining applicability has been raised from 4000 to 4200 MM Btu/hr.

1. For sources with fuel input < 4200 MM Btu/hr, maximum allowable emission rate is $E = 1.02\ Q^{0.769}$

2. For sources with fuel input > 4200 MM Btu/hr, $E = 17.0\ Q^{0.432}$, where E = emission rate in lbs PM/MM Btu and Q = heat input rate in MM Btu/hr.

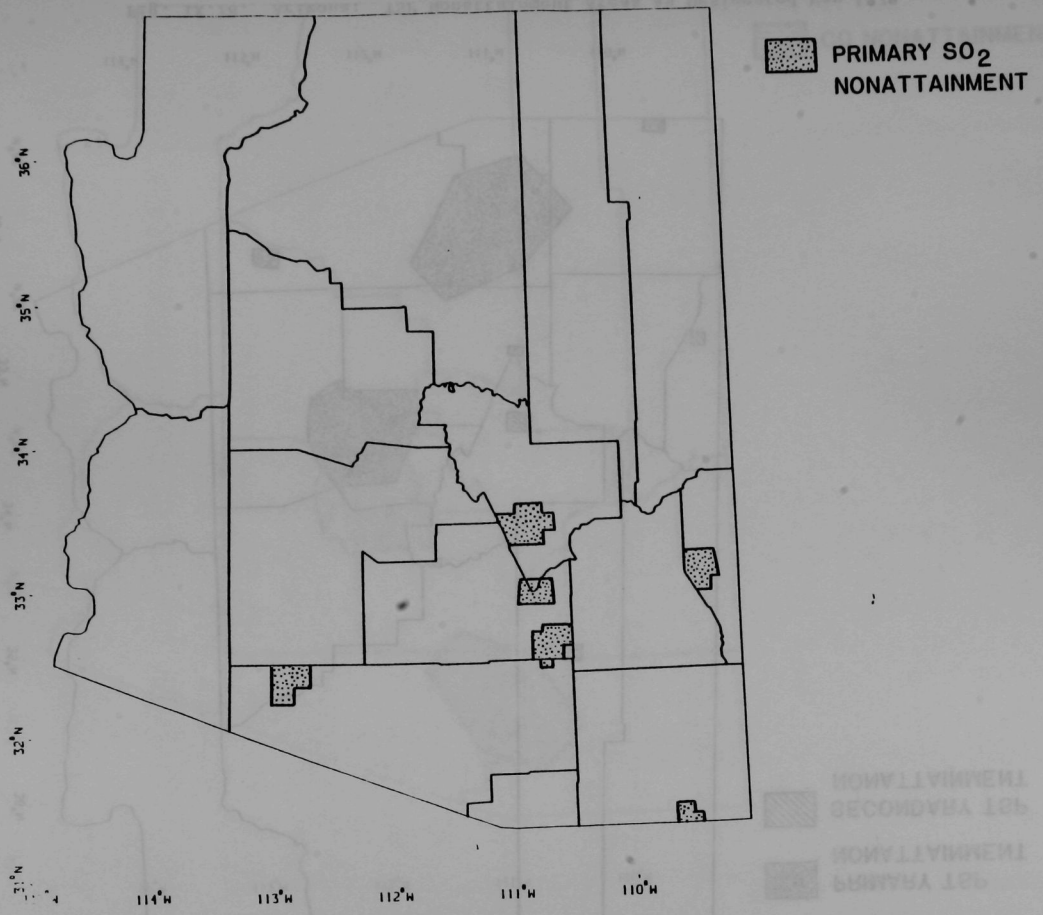


Fig. IX.77. Arizona: SO_2 Nonattainment Areas as Designated May 1979

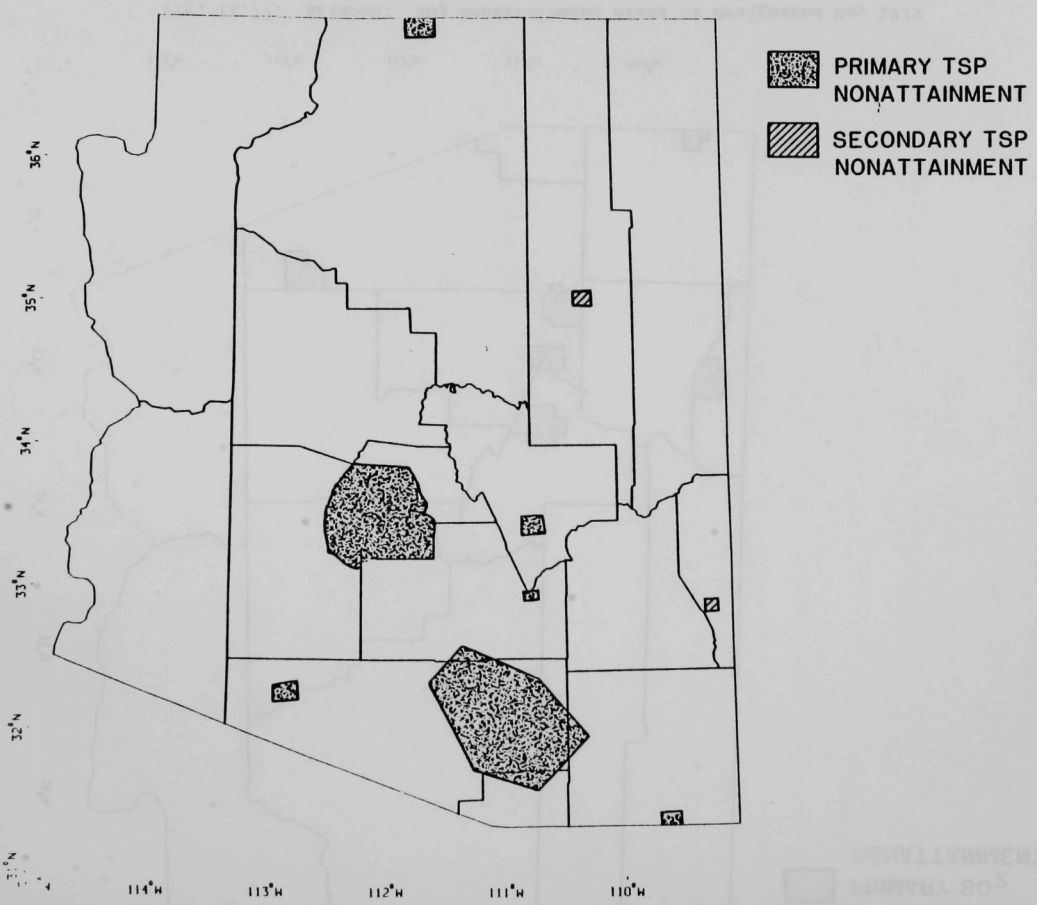


Fig. IX.78. Arizona: TSP Nonattainment Areas as Designated May 1979

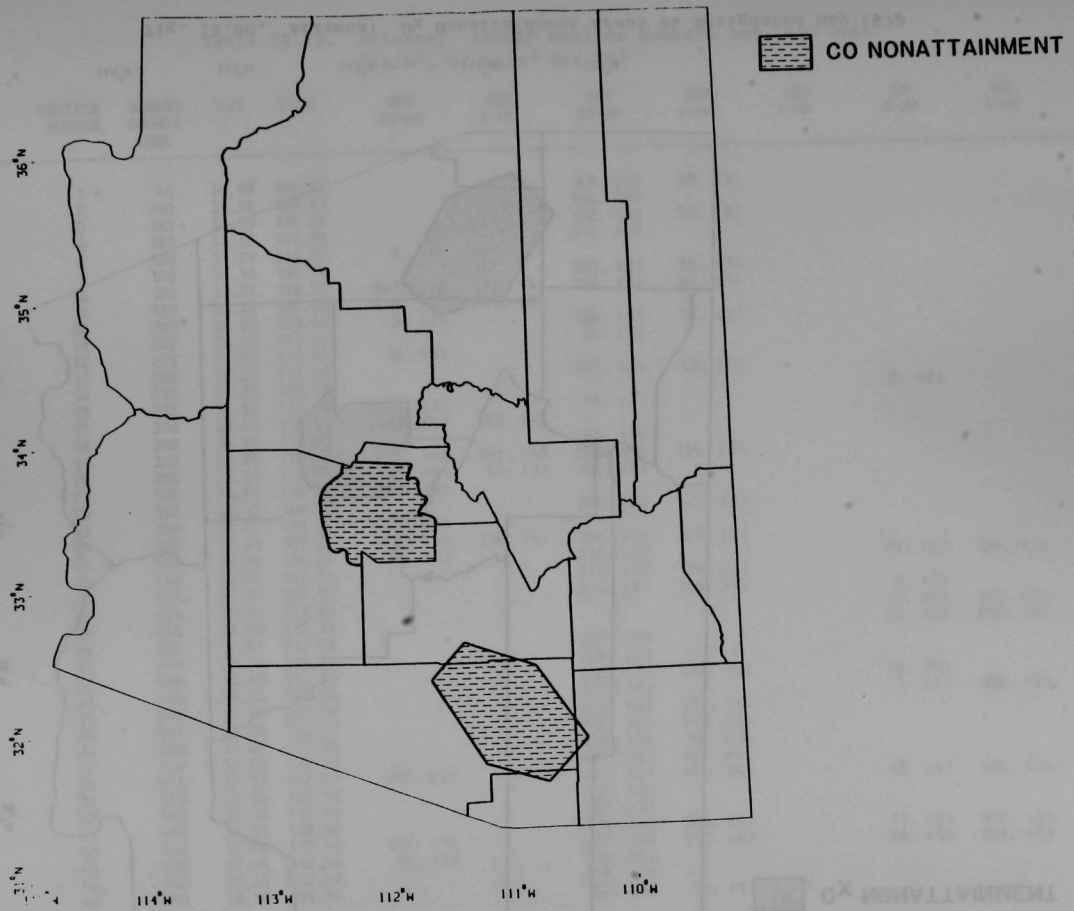


Fig. IX.79. Arizona: CO Nonattainment Areas as Designated May 1979

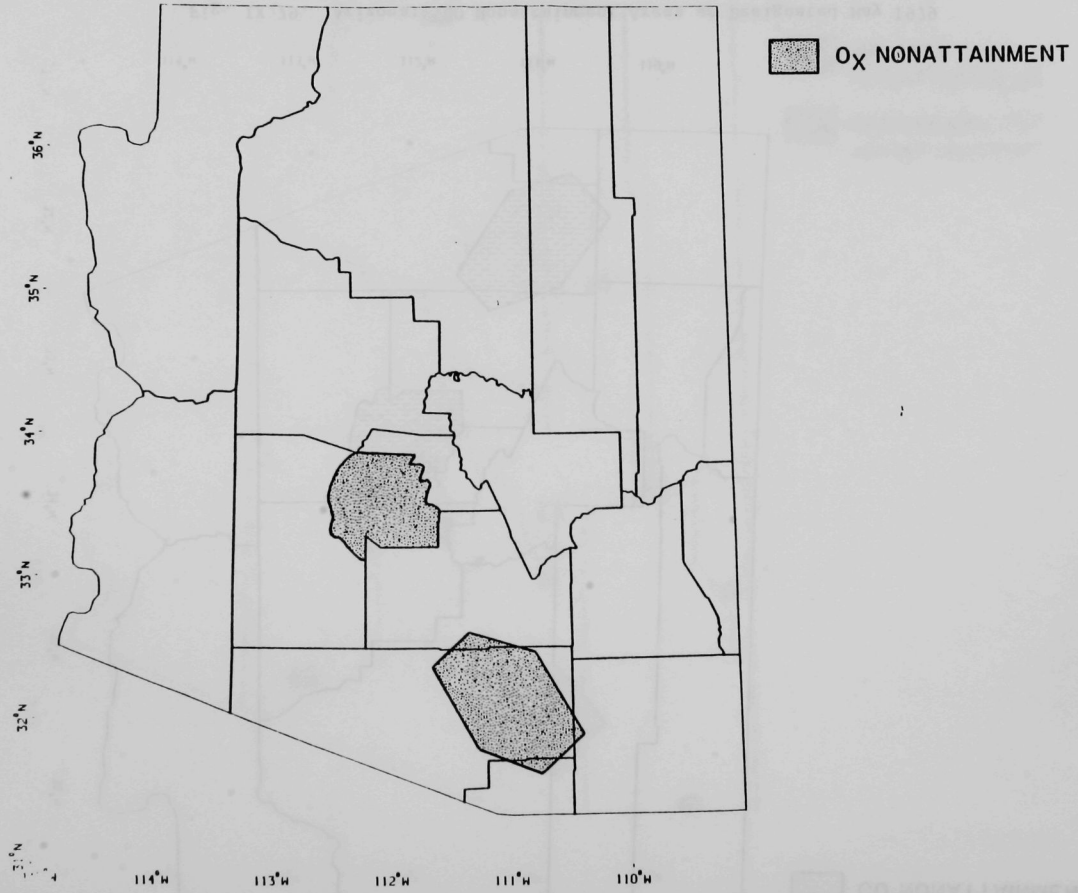


Fig. IX.80. Arizona: O_X Nonattainment Areas as Designated May 1979

Table IX.13. Arizona: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1 *	40	34.02	106.88			164. (1)	49. (1)			
2	180	31.36	109.59			146. (1)				
3	180	31.55	110.30			122. (1)	50. (1)			
4	180	31.35	109.54			210. (2)				
6	180	31.89	110.25	3. (1)						
7	180	31.36	109.74			203. (2)	86. (3)			
8	180	31.37	109.58	601. (4)	92. (3)	118. (1)	46. (1)			
9	180	31.36	109.59	610. (4)	94. (3)					
10	200	36.93	111.46	3. (1)		128. (1)	37. (1)			
11	200	36.93	111.46			38. (1)				
12	200	36.93	111.46	15. (1)						
13	200	35.20	111.65			200. (2)	60. (2)			
14	200	35.20	111.65						8. (2)	
15	200	36.06	112.12	14. (1)		78. (1)				
17	300	33.03	110.81	1213. (4)	131. (4)					
18	300	33.44	110.83			62. (1)				
19	300	33.00	110.79	767. (4)	101. (4)	573. (4)	134. (4)			
20	300	33.39	110.87	931. (4)	33. (1)	101. (1)				
21	300	33.41	110.85	341. (2)						
22	360	57.13	109.02			228. (2)	121. (4)			
23	380	33.09	109.29	1004. (4)						
24	380	33.01	109.36	1402. (4)	176. (4)	151. (1)	60. (2)			
25 *	440	34.15	118.26	91. (1)		231. (2)			10. (2)	196. (3)
26	440	33.44	111.92			233. (2)	115. (4)			
27	440	33.57	111.93			532. (4)	146. (4)		4. (1)	
28	440	33.44	111.92						15. (4)	141. (2)
29	440	33.45	112.10						23. (4)	245. (4)
30	440	33.61	112.28			153. (1)				
31	440	33.31	111.84			209. (2)				
32	440	33.42	111.83			228. (2)	117. (4)		16. (4)	
33	440	33.46	112.36			379. (4)			3. (1)	182. (3)
34	440	33.37	111.96			420. (4)	173. (4)			
35	440	33.29	112.17			1082. (4)	145. (4)			
36	440	33.82	111.90			138. (1)	42. (1)			
37	440	33.45	112.10			427. (4)	169. (4)			
38	440	33.37	112.07	109. (1)		252. (2)	144. (4)		13. (4)	133. (2)
39	440	33.40	112.12			325. (3)				
40	440	33.44	112.08			262. (3)				
41	440	33.55	112.06			335. (4)	125. (4)		11. (3)	192. (3)
42	440	33.46	112.04	112. (1)		287. (3)	112. (4)		24. (4)	251. (4)
43	440	33.46	112.04	19. (1)		238. (2)				
46	440	33.60	112.00			279. (3)				
48	500	35.19	114.56			142. (1)	37. (1)			

Table IX.13. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
49	500	35.37	114.15	26. (1)		110. (1)				
50 *	500	35.11	120.31			155. (1)	42. (1)			
51	500	35.19	114.56	19. (1)						
52	500	35.19	114.06			268. (3)	37. (1)			
53	520	34.26	110.04			178. (1)	48. (1)			
55	620	32.27	110.97			362. (4)	174. (4)			
56	620	32.21	110.87	43. (1)	5. (1)			54. (1)	8. (2)	255. (4)
58	620	32.19	110.79			132. (1)	62. (2)			
59	620	32.21	110.91						18. (4)	
61	620	32.36	110.97			195. (1)	66. (2)			
62	620	32.18	111.01			169. (1)	79. (3)			
63	620	32.22	110.98						9. (2)	196. (3)
64	620	32.22	110.82			201. (2)	84. (3)			
65	620	32.36	110.97	57. (1)						
66	620	32.25	110.95			175. (1)				
68	620	32.18	110.88			130. (1)	71. (2)			
70	620	32.20	110.97			189. (1)	96. (4)			
72	620	32.38	112.85			200. (2)				
73	620	32.22	110.98			173. (1)	68. (2)			
74	620	32.25	110.95	22. (1)						
75	620	32.38	112.85	387. (3)						
76	620	31.95	112.80			67. (1)	24. (1)			
77	620	32.42	111.18			148. (1)				
78	620	32.40	111.13			156. (1)	64. (2)			
79	620	31.98	110.77			61. (1)	28. (1)			
80	620	31.85	110.98			110. (1)	53. (1)			
81	620	31.87	111.10	21. (1)		373. (4)				
82	620	32.23	110.75	37. (1)						
83	620	32.17	110.74	52. (1)						
84	620	32.09	110.96			144. (1)	54. (1)			
85	620	32.32	111.04			200. (2)	87. (3)			
87	620	32.25	110.84			132. (1)	60. (2)			
88	620	32.27	110.99			165. (1)	74. (2)			
90	640	32.61	111.63	303. (2)						
91	640	32.63	110.64	593. (4)						
92	640	33.02	111.39			1013. (4)	156. (4)			
93	640	32.63	110.64			136. (1)	61. (2)			
94	640	33.02	111.39	105. (1)						
96	640	33.29	111.10			228. (2)	77. (3)			
97	640	32.88	111.75			368. (4)	147. (4)			
98	720	31.34	110.93			166. (1)				
99	720	31.34	110.94			223. (2)				
101	940	34.53	112.48			140. (1)	48. (1)			

Table IX.13. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
102	940	34.58	111.82			103. (1)	27. (1)			
103	940	34.77	112.06			125. (1)	49. (1)			
104	980	32.72	114.60			666. (4)	91. (3)		4. (1)	240. (4)

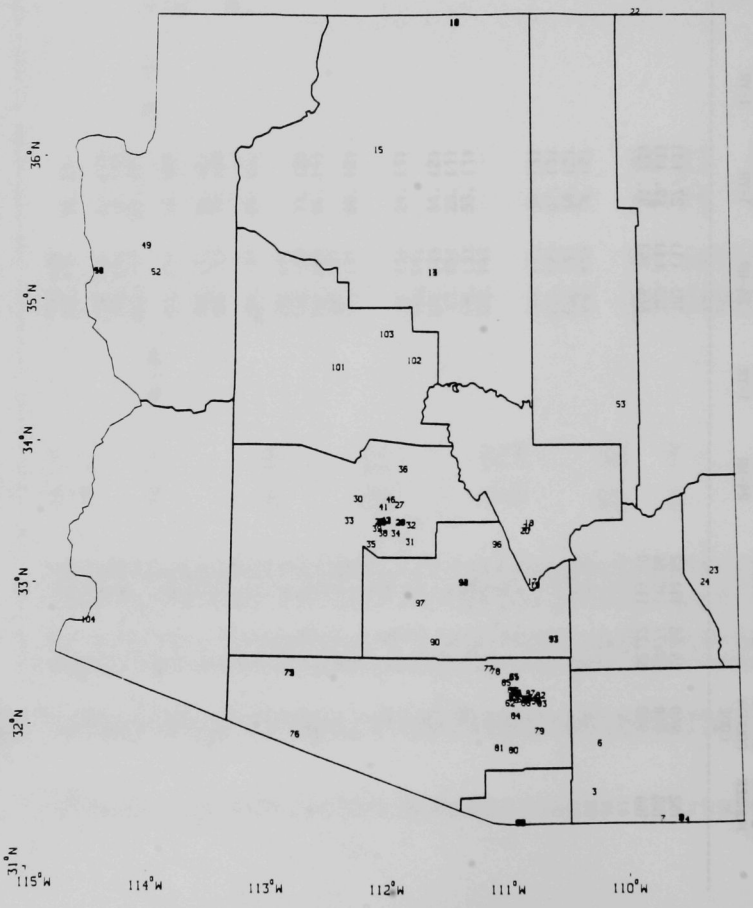


Fig. IX.81. Arizona: Locations of SAROAD Monitors (See Table IX.13 for Monitor Numbers)

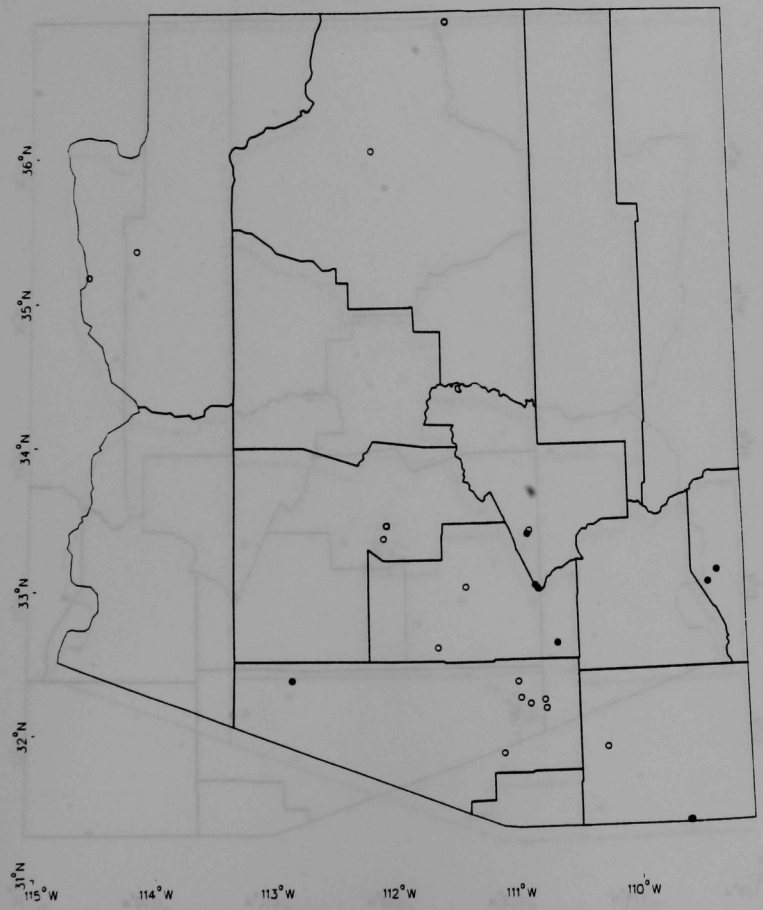


Fig. IX.82. Arizona: Monitors Reporting Adequate Data on 24-hr Average SO_2; Violations Shown by Shaded Circles

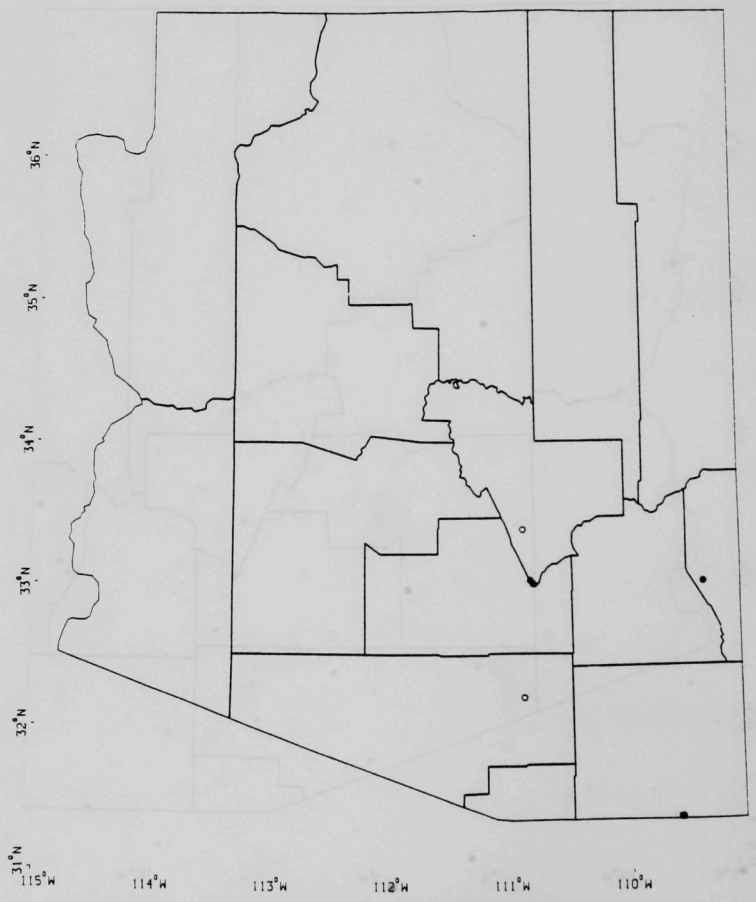


Fig. IX.83. Arizona: Monitors Reporting Adequate Data on Annual Average SO_2; Violations Shown by Shaded Circles

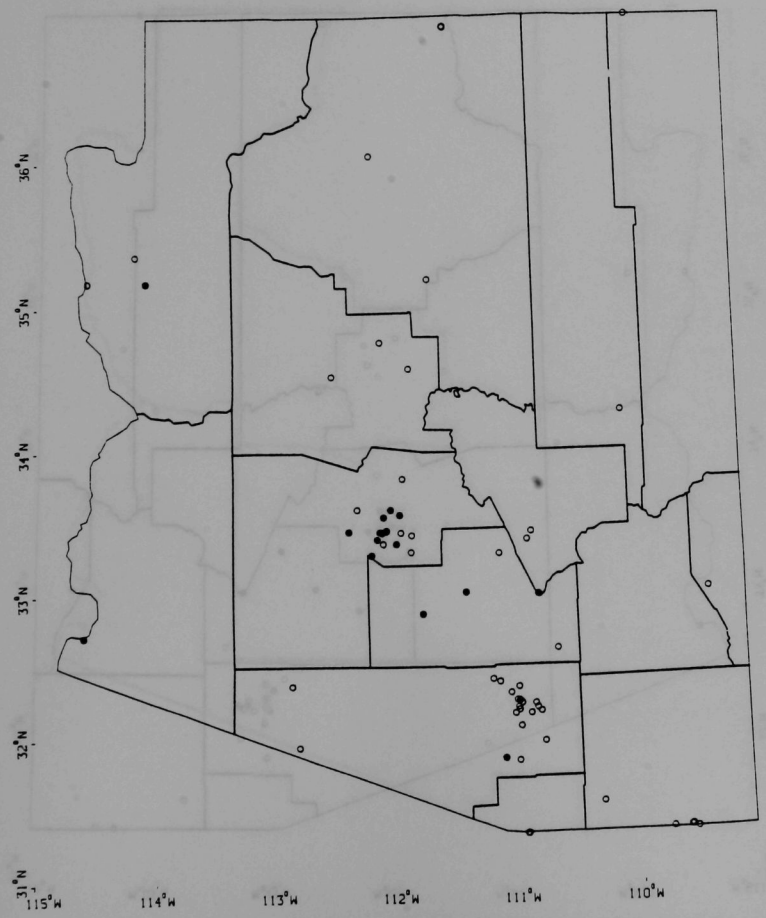


Fig. IX.84. Arizona: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

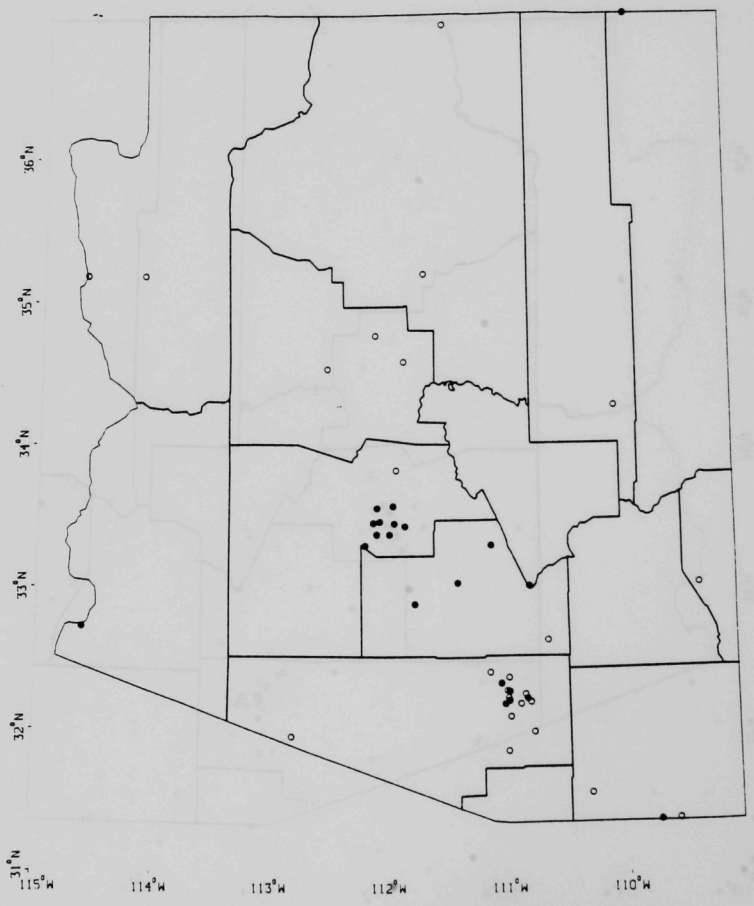


Fig. IX.85. Arizona: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

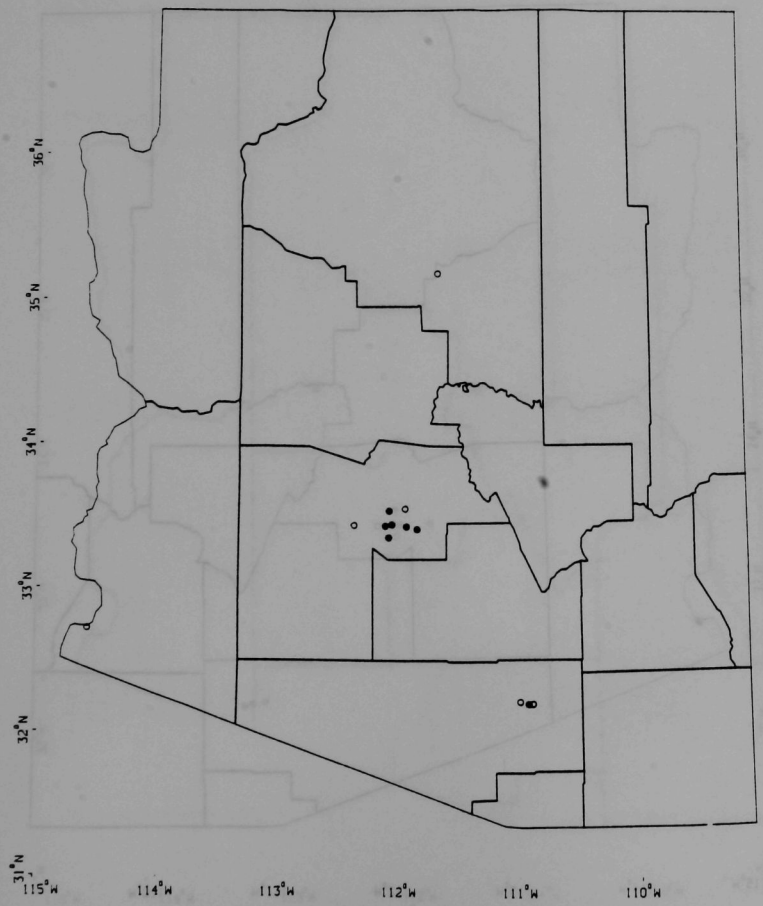


Fig. IX.86. Arizona: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

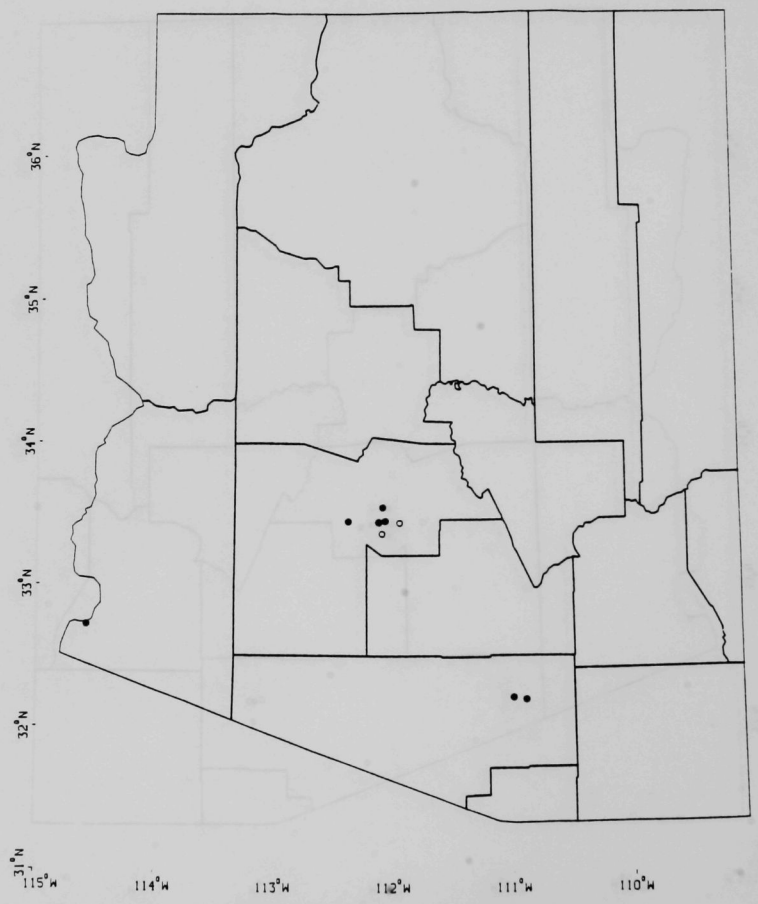


Fig. IX.87. Arizona: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

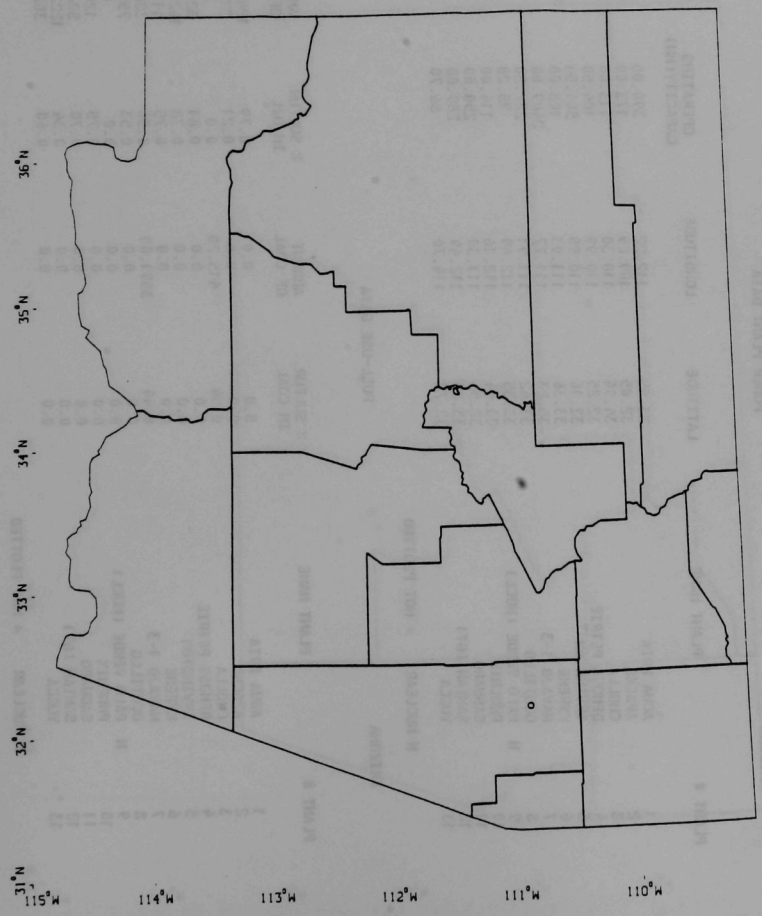


Fig. IX.88. Arizona: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table IX.14. Arizona: Power Plant and Fuel Use Data

ARIZONA — POWER PLANT DATA

PLANT #		PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1		AGUA FRIA	33.55	112.22	390.00	0.0
2		APACHE	32.05	109.89	173.00	0.0
3		CHOLLA	34.94	110.30	113.60	0.0
4		DEMOSS PETRIE	32.25	110.99	104.50	0.0
5		IRVINGTON	32.16	110.90	504.54	0.0
6		KYRENE	33.36	111.93	108.00	0.0
7		NAVAJO 1-3	35.83	111.77	2409.00	0.0
8		OCOTILLO	33.42	111.91	227.20	0.0
9	N	PALO VERDE (NUCL)	33.35	112.49	25.20	0.0
10		PHOENIX	33.44	112.16	116.00	0.0
11		SAGUARO	32.55	111.30	250.00	0.0
12		SANTAN (GT)	33.35	112.49	289.00	0.0
13		YUCCA	32.72	114.70	86.70	0.0

N NUCLEAR * NOT PLOTTED

ARIZONA — FUEL-USE DATA

PLANT #		PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1		AGUA FRIA	0.0	0.0	0.79	1244.51	2803.19
2		APACHE	0.0	0.0	0.21	225.00	2228.10
3		CHOLLA	0.54	415.20	0.0	0.0	52.40
4		DEMOSS PETRIE	0.0	0.0	0.81	321.05	663.33
5		IRVINGTON	0.0	0.0	0.78	1629.40	4037.93
6		KYRENE	0.0	0.0	0.75	117.02	316.05
7		NAVAJO 1-3	0.44	3591.00	0.50	386.60	0.0
8		OCOTILLO	0.0	0.0	0.53	755.20	1975.75
9	N	PALO VERDE (NUCL)	0.0	0.0	0.0	0.0	0.0
10		PHOENIX	0.0	0.0	0.75	129.00	198.00
11		SAGUARO	0.0	0.0	0.70	526.60	1027.80
12		SANTAN (GT)	0.0	0.0	0.34	1222.53	0.0
13		YUCCA	0.0	0.0	0.60	302.60	1373.90

N NUCLEAR * NOT PLOTTED

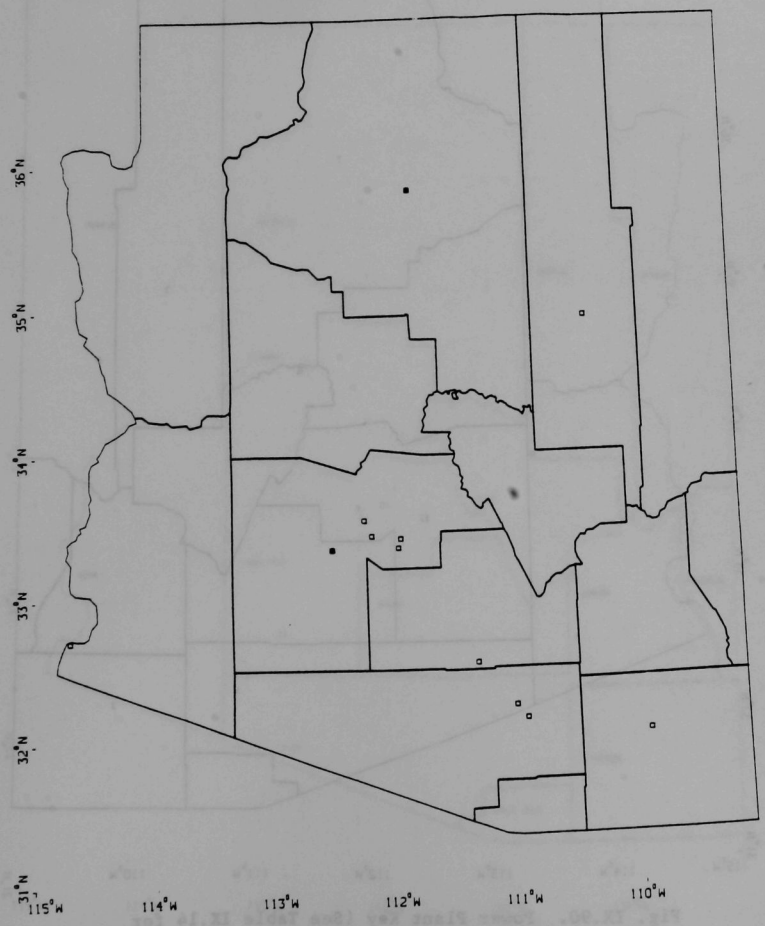


Fig. IX.89. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

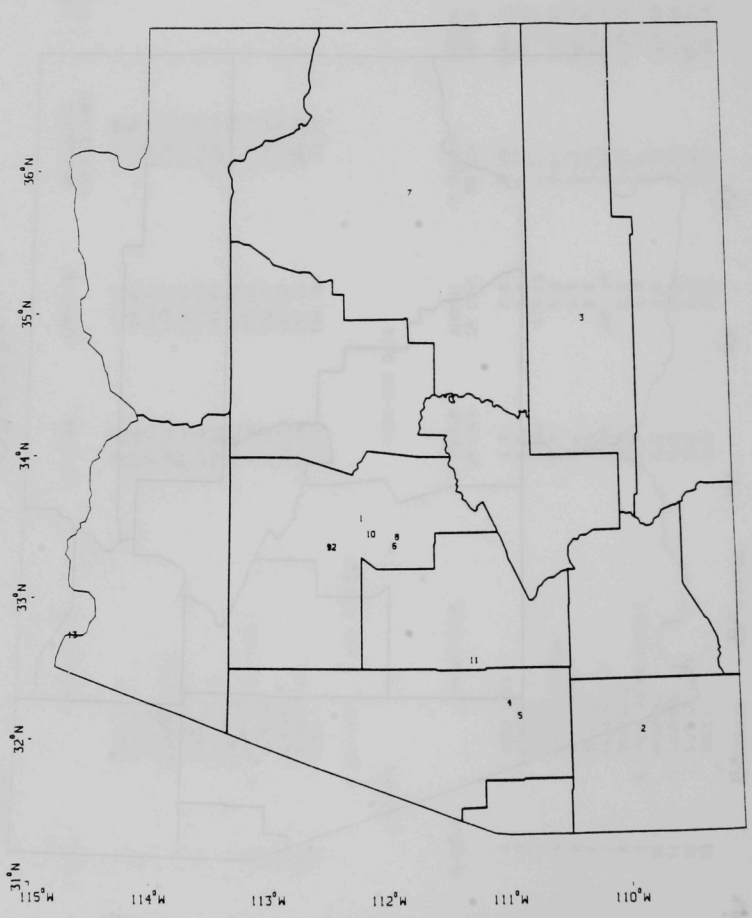


Fig. IX.90. Power Plant Key (See Table IX.14 for Identification and Fuel Use Data)

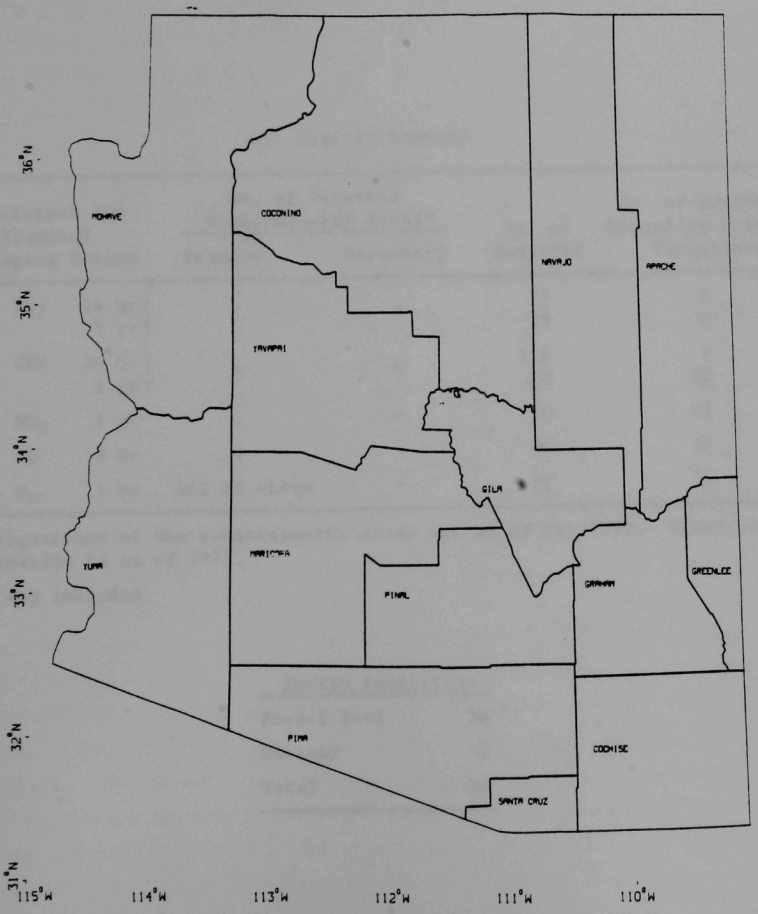


Fig. IX.91. Arizona: Key to Counties

REGION IX: CALIFORNIA

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	1	0	77	0
	1 yr			29	0
TSP	24 hr	5	6	116	9
	1 yr			60	25
NO_x	1 yr	1	-	50	13
CO	8 hr	6	-	69	37
O_x	1 hr	1/2 of state	-	81	74

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	36
Nuclear	2
Total	38

CALIFORNIA

(Drafts, 1/79 SIP, 8/79 SIP still incomplete)

I. SOURCES OF THE PROBLEM

California has nonattainment areas designated for all the criteria pollutants. The state's unique topography has resulted in some of the nation's most severe air quality problems. The aridity of portions of California exacerbate the TSP problem. The mountains that ring Los Angeles and line the eastern edge of the San Joaquin Valley trap air in inversion layers, producing a significant ozone problem. Mountains to the south and east of San Francisco have a similar effect on communities around the bay area. California also has developed one of the most aggressive environmentally protective pollution control agencies in the U.S. -- the California Air Resources Board (CARB). The SIP notes several times that California has more stringent standards than required by the federal EPA (for example, for automobile emissions and control technologies for VOC sources), suggesting that more consistent EPA policies would help the state in accomplishing air quality goals.

California is divided into 14 air basins -- North Coast; Lake; North Central; South Central (Santa Barbara & Ventura); San Diego; South Coast (Los Angeles); San Joaquin Valley; Sacramento Valley; Great Basin Valley; Northeast Plateau; Southeast Desert; Lake Tahoe; San Francisco Bay area; and Mountain Counties. The larger air basins contain a number of local air pollution control districts, each with its own jurisdiction and responsibility to address air quality problems. For example, San Joaquin has eight counties, each of which has a separate, but "coordinated" attainment strategy. As a result, the SIP is a compilation of numerous locally-developed plans, rules and regulations, as revised/approved by the CARB. As of January, 1980, CARB was still reviewing some area plans before submittal to the regional EPA office. The failure to submit and complete SIPs and the failure of the state legislature to pass legislation on inspection and maintenance of motor vehicles has led to delay in the permit approval for some 40 major projects (according to the Region IX office, in February 1980). The following material is based on the CARB summary document and detailed portions of the plans that were available.

There is only one SO_2 nonattainment area in California -- Kern County in the San Joaquin Air Basin. Getty Oil Co.'s oil drilling operations in Oildale, in particular emissions from the boilers and steam generators used to provide tertiary or enhanced oil recovery, are responsible for the violations.

California's most complex air quality problem is TSP, with over one half of the state designated as in nonattainment for either the primary or secondary standard. San Francisco is the only major metropolitan area in the state that is not violating either particulate standard. In most urban/industrial nonattainment areas, a substantial fraction of the particulate load consists of secondary particulates, or pollutants formed in the atmosphere from the chemical or photochemical reaction of precursor gases, particularly sulfates from SO_2 and nitrates from NO_x. In rural areas, the problem is largely wind-blown dust and particulates from agricultural activities. Unlike many other parts of the U.S., traditional industrial sources of soot and ash are minor contributors to violations of existing standards since (CARB believes) these sources are more stringently controlled in California than elsewhere.

The only NO_x nonattainment area is in the South Coast Air Basin -- Los Angeles and San Diego. Over 70% of the state is designated as in nonattainment for ozone -- including every major urban area. The violations are the result of hydrocarbon emissions from mobile and stationary sources, pesticides in agricultural areas, and the transport of the pollutant. Every major urban area is also in nonattainment of the CO standard. California's 12 million cars are responsible for close to half of the HC and NO_x emissions and the bulk of the CO emissions.

The CARB lists the following as the most important points in the SIP submittal:

- The 1979 SIP will result in substantially improved air quality but further emission control measures must be developed before the air quality standards for ozone and CO can be met
- Achieving clean air at Lake Tahoe may require federal action. The state blames continuing air pollution problems on the failure of Nevada to cooperate in a bistate regional planning agency and to control further development in the area

- Los Angeles may not meet the national standards without massive changes in the area's transportation system and changes in the Federal Outer Continental Shelf policy covering off-shore oil development.
- A reduction in oil consumption will have significant air quality benefits.

Over 90% of California's air pollution problems can be associated with the use of oil. Fuels refined from oil produce hydrocarbons, carbon monoxide, oxides of nitrogen, sulfur dioxide, and particulate matter emissions when they are burned in motor vehicles, electric power plants, and industrial facilities. These same pollutants are produced during the refining of the oil. Hydrocarbon evaporation from gasoline and solvents used in paint and cleaning compounds are also a major problem. Consequently, CARB is pursuing a series of measures to reduce oil use and improve air qulaity.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Only one area, Kern Co., is in nonattainment
2. This nonattainment area is to be redesignated to a smaller area surrounding the Getty Oil Co. installation
3. County strategy: control of new sources through PSD and existing new source review will prevent additional violations
4. CARB is recommending emission controls on existing sources
   a. Reasonably Available Control Measures (RACM) on oil-fired steam generators
   b. Study possible controls for electric utility boilers and catalytic cracking units

B. TSP

1. South Coast Air Basin
   a. RACTs are already required for traditional sources
   b. TSP from wind-blown dust and secondary aerosols
   c. Continue analysis
   d. Develop strategy

2. San Diego

   a. RACMs are already required for traditional point sources

   b. Request extension of deadline to submit plan

   c. Study and evaluate fugitive dust control measures

   d. Implement fugitive dust control measures

      - ozone transportation measures to reduce vehicle miles traveled should reduce resuspended road dust

   e. Assess the contribution of agricultural and rural dust to the TSP problem

3. San Joaquin Valley

   a. Request extension of the deadline to submit a plan

   b. Study, evaluate, and implement fugitive dust measures

4. Statewide

   a. Reductions in SO_2, HC, and NO_2 emissions reduce formation of secondary particulates: sulfates, organic particulates, and nitrates

   b. Emissions offset policy for new sources in nonattainment areas

C. O_x

1. California MVECP

   a. Emission limits more stringent than federal program:

Vehicles	Exhaust Emissions (grains/mile)		
	HC	C	NO_x
1979 Model Calif. cars	0.41	9.0	1.5
1979 Model other-state cars	1.5	15.0	2.0

2. Program for inspection and maintenance of motor vehicles

3. RACT

a. Vapor recovery during gasoline-marketing

b. Double seals for petroleum storage tanks

c. Wellhead vapor recovery

d. Limitations on gasoline vapor pressure

e. Limitations on the solvent content of paints

f. Incorporation of the EPA Control Technology Guidances as a minimum

g. CARB controls are even stricter than the control technology guidances in some instances

- will result in more hydrocarbon reductions
- will cover more sources

4. Transportation control measures

a. Measures affecting vehicle activity

- improved public transit
- carpool programs including exclusive rights-of-way for buses and carpools
- banning autos from selected roads/areas while providing transit
- long-range transit improvements
- limitations on on-street parking
- parking management to encourage transit/ carpool use
- use of bicycle lanes and pedestrian malls
- employer participation programs to encourage carpool, mass transit, bicycle, and walking
- improved bicycle facilities to improve safety and convenience and to encourage their use
- staggered work hours
- road user fees, tolls, and other fees to discourage single-occupancy vehicle trips

b. Measures affecting emissions from individual vehicles or related sources

- motor vehicle inspection programs
- control of evaporative emissions from fuel storage and transfer

- limitations on extended idling
- improved traffic flow to reduce congestion and emissions
- conversion of fleet vehicles to cleaner engines/fuels
- retrofit heavy-duty vehicles, off-road vehicles and/or utility equipment with pollution control devices
- reduce vehicle emissions caused by extreme cold-start conditions

5. Role of NO_x

   a. Study emission limitations on stationary sources

   b. Need to be aware of important relation of HC/NO_x to O_x formation

D. CO

1. Calif. MVECP
2. Inspection and maintenance of motor vehicles
3. O_x transportation control measures
4. Additional traffic flow improvements as needed to eliminate hot spots

E. NO_x

1. San Diego

   a. Petitioning for redesignation to attainment

      - because of re-evaluation of calibration technique for monitors
      - still violating state's one-hour standard

   b. CMVECP

   c No further controls on stationary sources

   d. Study additional measures

2. Los Angeles

   a. Plan not available

F. California Energy Commission Program

1. Conservation to be actively pursued

2. Reduction in oil consumption will reduce emissions of all criteria pollutants

III. NEW SOURCE REVIEW

CARB claims to have created the emission-offset policy in the state in an effort to accommodate clean air goals and economic growth. The state has had one of the most active emissions offset programs, having handled close to 500 cases. The offset policy for new sources will be continued in all of California's nonattainment areas, since many local plans do not even project attainment and maintenance of the standards, much less project a growth allowance. Ventura County will be the only exception to an emission offset requirement. The county has developed a stringent system of emission allocations, providing yearly allowable emissions from population-related stationary and miscellaneous sources. Local cities and the county are responsible for implementing the population-related emissions through land use management programs. The Air Pollution Conrol Board is responsible for implementing the stationary source emission limitations, by revising the New Source Review Rule to specify where, when, and if the modification or construction of a stationary source will be allowed to occur.

The CARB has adopted a model new source review rule, which is supposed to be included in all locally-adopted plans. Under the proposed rules, any new source that emits over 250 lb per day of a criteria pollutant (other than CO) will be subject to review. An exemption may be obtained for cogeneration, biomass, or refuse-powered generating plants, provided no new violations of NAAQS will result and the pollution control district has established an "alternative energy project" offset bank. A 1.2:1 ratio of emissions offsets to emissions for new sources shall be required of offsets located either upwind in the same or adjoining counties or within a 15-mile radius of the proposed new source. Offsets obtained from other areas must be sufficient to show a net air quality benefit. Excess emissions reductions may be banked for use within 15 miles of the site where reductions occurred. Emissions reductions of one precursor may be used to offset emissions increases of another precursor of the same secondary pollutant provided no new violations or contributions to existing violations will occur at the point of maximum impact. (At the moment, federal policy does not permit such interpollutant tradeoffs.)

The CARB has also included procedures for reconciling review of new power plant facilities with the newly established California Energy Commission. CARB argues that there is a place for coal-fired power plants in the state, provided they are carefully sited and use both low-sulfur coal and stack gas scrubbers. Currently, there are no coal-fired utilities in the state. However, a permit to construct a coal-fired facility is being negotiated by Pacific Gas and Electric Company.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

a. South Coast

- 0.25% sulfur content
- industrial sources, 0.5% sulfur content

b. Bay area

- 0.5% sulfur content

c. San Joaquin

- 200 lb SO_2/hr
- Kern County - Getty Oil reduction from 0.6 lb S/MM Btu to 0.25 lb S/MM Btu by 1982 and 0.06 lb S/MM Btu by 1984

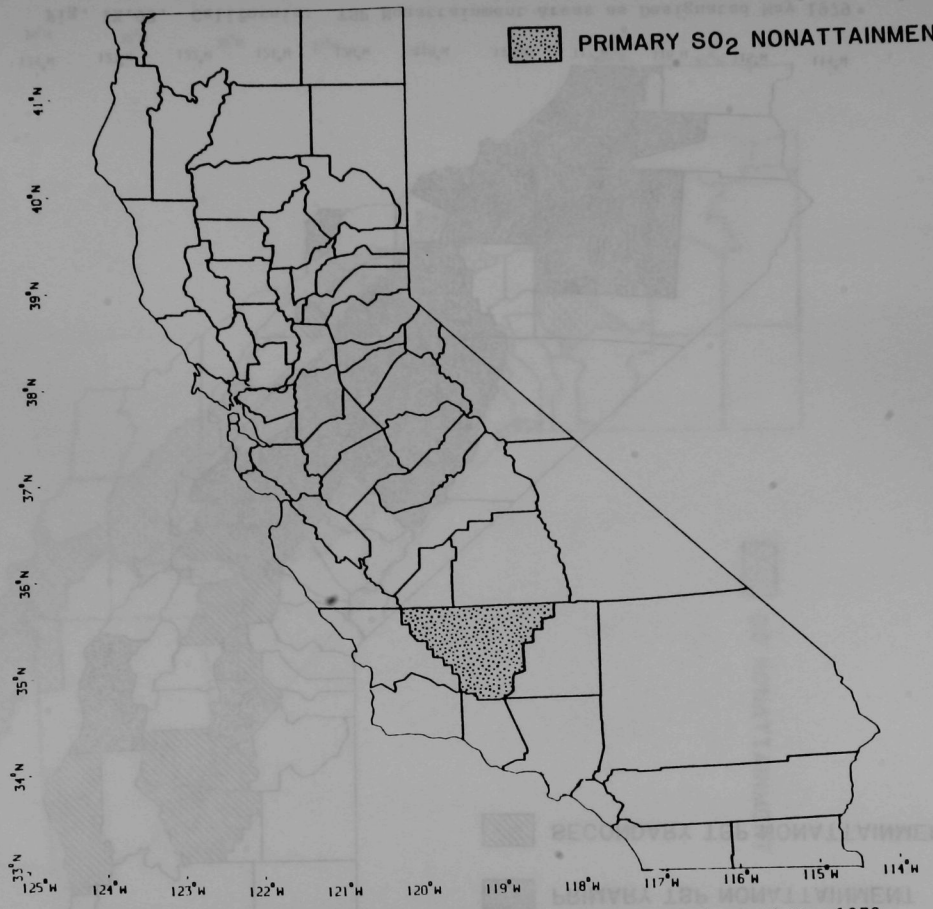


Fig. IX.92. California: SO_2 Nonattainment Areas as Designated May 1979

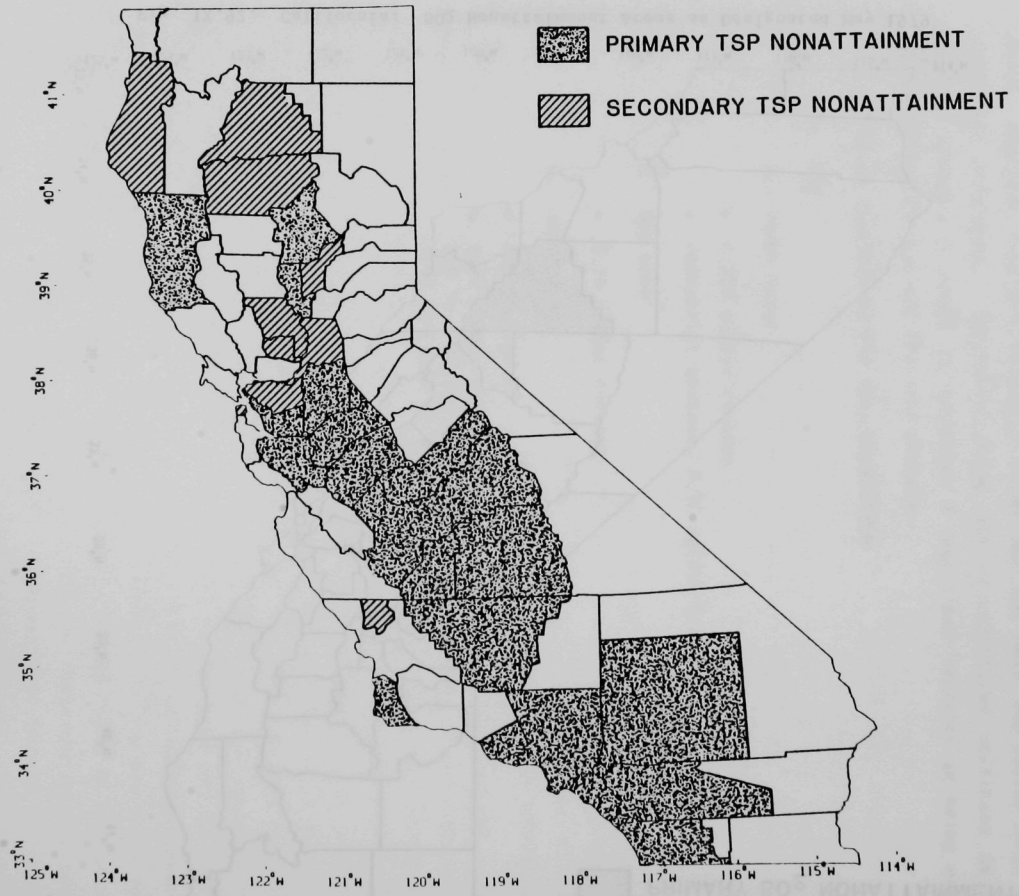


Fig. IX.93. California: TSP Nonattainment Areas as Designated May 1979

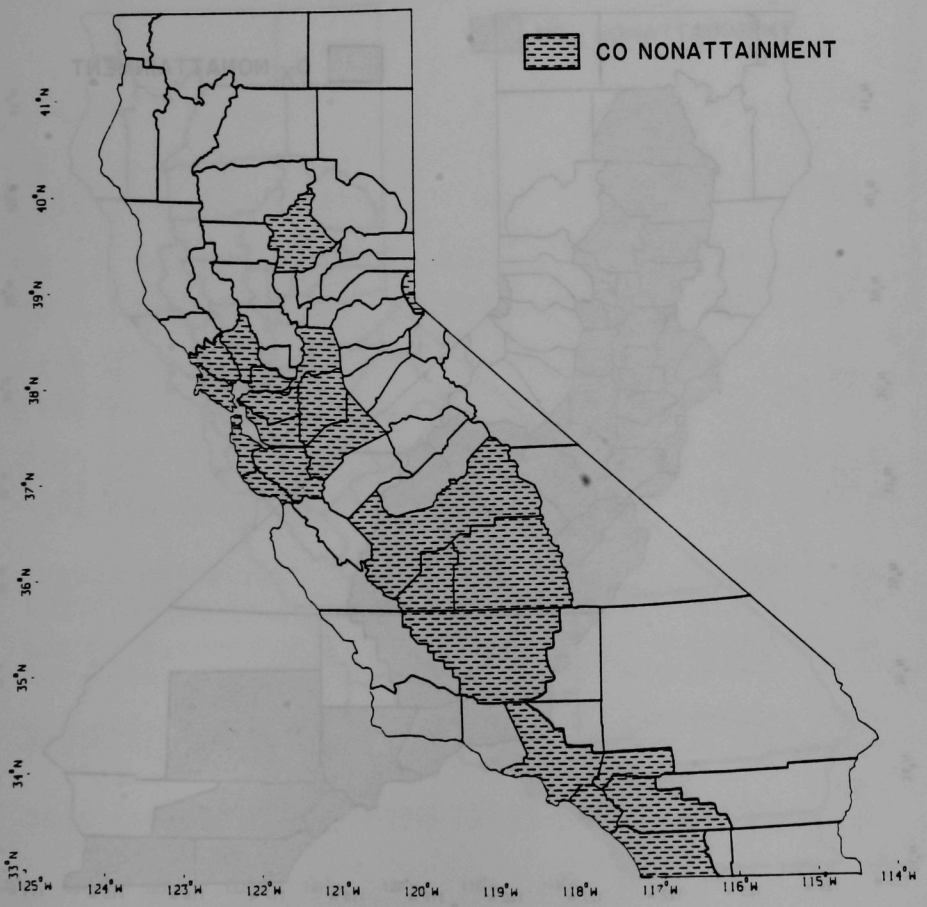


Fig. IX.94. California: CO Nonattainment Areas as Designated May 1979

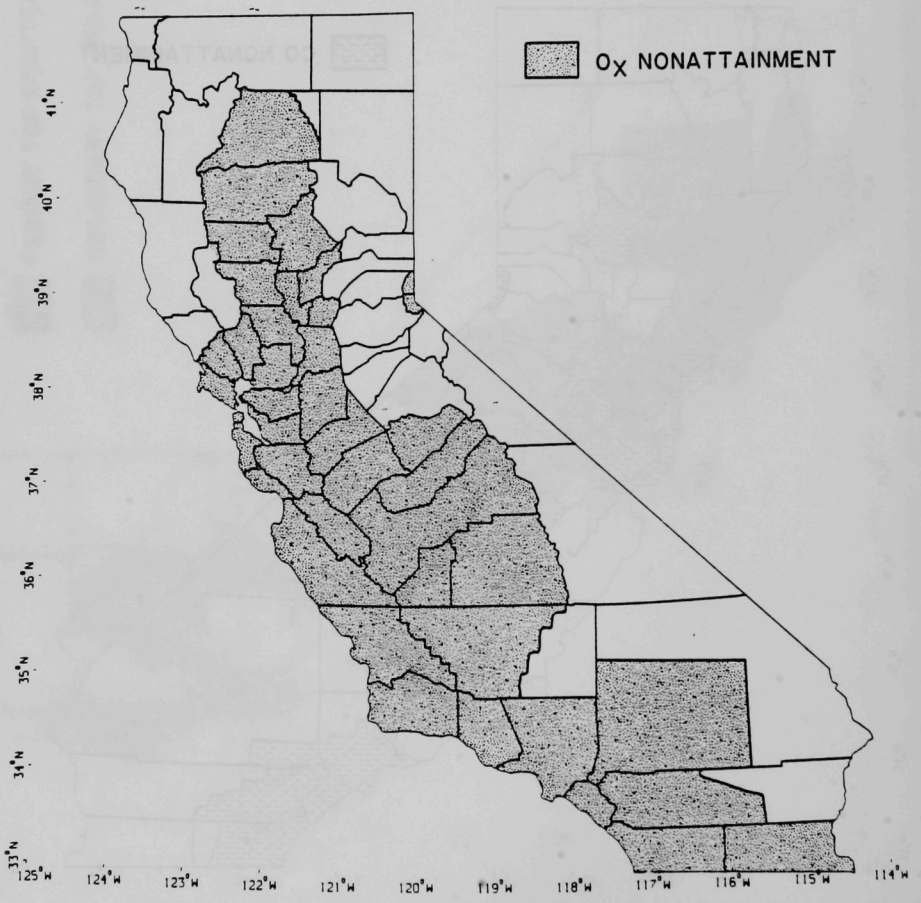


Fig. IX.95. California: O_x Nonattainment Areas as Designated May 1979

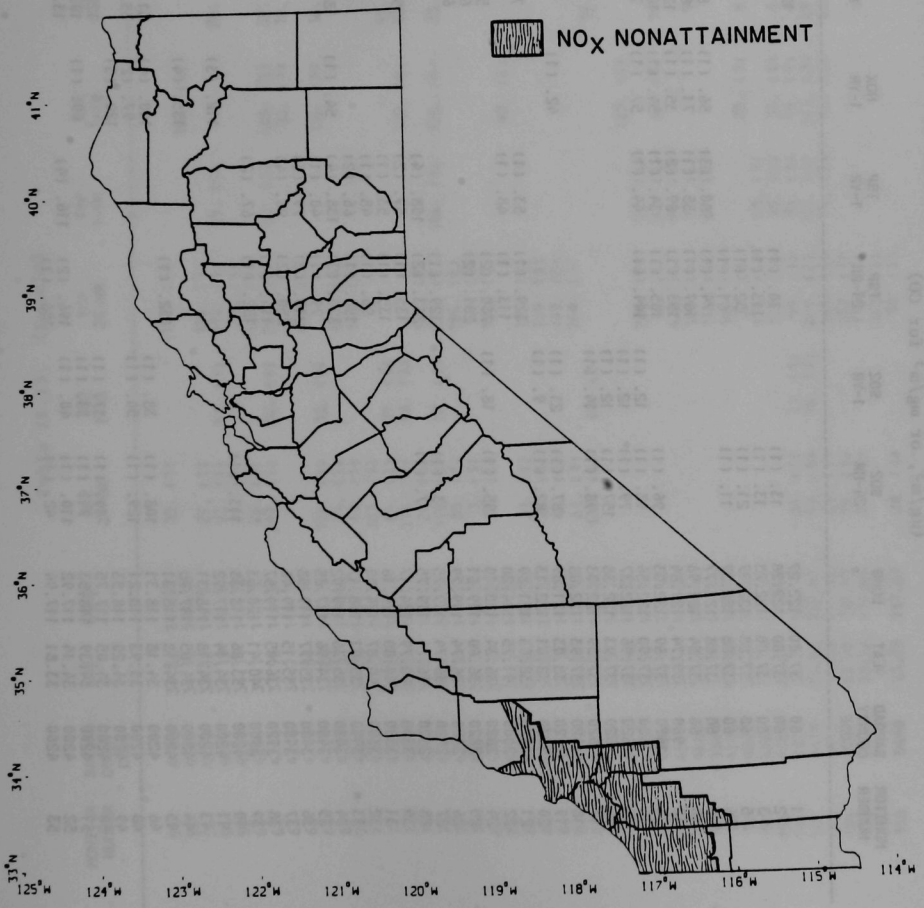


Fig. IX.96. California: No_x Nonattainment Areas as Designated May 1979

Table IX.15. California: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	60	37.80	122.27						12. (3)	196. (3)
2	60	37.80	122.28	13. (1)		70. (1)				
3	60	37.80	122.23	13. (1)		113. (1)				
5	60	37.88	122.27	21. (1)		52. (1)				
6	60	37.88	122.27	11. (1)		61. (1)				
8	60	37.68	121.77			174. (1)	80. (3)	56. (1)	8. (2)	392. (4)
10	60	37.54	121.96			169. (1)	55. (1)	71. (1)	8. (1)	372. (4)
12	960	39.74	121.84			153. (1)	69. (2)	35. (1)	12. (3)	196. (3)
13	1620	37.89	122.03	96. (1)		105. (1)	34. (1)	54. (1)	10. (2)	274. (4)
14	1620	37.90	122.36	93. (1)	12. (1)	144. (1)	44. (1)	57. (1)	7. (1)	176. (3)
15	1620	37.96	122.37	79. (1)	12. (1)					
16	1620	37.93	122.38	157. (1)	12. (1)					
17	1620	37.89	122.03	98. (1)	14. (1)					
18	1620	37.93	122.08							314. (4)
19	1620	38.03	121.89	87. (1)	21. (1)			42. (1)		196. (3)
20	1620	38.01	122.13	82. (1)	9. (1)					
21	1620	38.03	121.89			129. (1)	53. (1)		7. (1)	
22	2000	41.75	124.20			113. (1)	48. (1)			
24	2820	36.34	120.10	55. (1)	18. (1)	260. (2)			5. (1)	157. (2)
25	2820	36.60	119.51			201. (2)			6. (1)	372. (4)
26	2820	36.74	119.79						6. (1)	39. (1)
27	2820	36.74	119.75	3. (1)		129. (1)				
28	2820	36.74	119.75	17. (1)		243. (2)	108. (4)			
30	3300	40.79	124.17			135. (1)	59. (2)		5. (1)	
31	3300	40.80	124.16			135. (1)	53. (1)			
32	3300	40.87	124.08			96. (1)	48. (1)			
33 *	3480	35.01	108.17			156. (1)	66. (2)			
34	3480	35.36	119.02			320. (3)	138. (4)	54. (1)	18. (4)	353. (4)
35	3480	34.96	117.65			79. (1)	40. (1)			
36	3480	35.77	119.58			210. (2)	79. (3)			
37	3480	35.15	119.46			250. (2)	96. (4)			
38	3520	36.05	119.57			114. (1)				
39	3800	40.41	120.63			152. (1)	67. (2)			
40	4200	33.86	118.38	113. (1)						
41	4200	34.14	117.92					112. (3)		627. (4)
43	4200	34.18	118.31							510. (4)
44	4200	34.05	117.75					135. (4)		
45	4200	34.18	118.31			152. (1)				
46	4200	34.18	118.31	108. (1)	38. (1)			140. (4)	31. (4)	
48	4200	33.93	118.21	129. (1)	50. (1)			97. (2)	33. (4)	294. (4)
49	4200	34.20	118.53					120. (3)		549. (4)
50	4200	34.05	117.75	89. (1)	37. (1)				12. (3)	
51	4200	34.39	118.53	71. (1)	33. (1)			60. (1)	10. (3)	588. (4)
52	4200	34.14	117.92	110. (1)	40. (1)	196. (2)	116. (4)		13. (4)	
53	4200	33.81	117.94	42. (1)		186. (1)				

Table IX.15. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
54	4200	33.82	117.91	35. (1)		142. (1)				
55	4200	34.15	118.12					154. (4)		608. (4)
56	4200	33.82	117.91	27. (1)		156. (1)				
58	4200	34.15	118.12	93. (1)	41. (1)	179. (1)	99. (4)		24. (4)	
59	4200	34.14	118.12	19. (1)		86. (1)				
60	4200	34.14	118.12	25. (1)		127. (1)				
62	4200	33.93	118.37	147. (1)	52. (1)	226. (2)	93. (3)	105. (3)	32. (4)	
63	4200	34.71	118.14					33. (1)	10. (2)	274. (4)
65	4200	33.80	118.19			167. (1)				
68	4200	33.82	118.19	178. (1)	55. (1)			116. (3)	18. (4)	255. (4)
69	4200	34.01	118.48	24. (1)		153. (1)				
70	4200	33.80	118.19	41. (1)		130. (1)				
71	4200	33.80	118.19	101. (1)					45. (4)	
72	4200	34.20	118.53	84. (1)	29. (1)					
73	4200	34.04	118.43	114. (1)	40. (1)			129. (4)	23. (4)	353. (4)
74	4200	34.04	118.24	22. (1)		153. (1)				
75	4200	34.04	118.24	143. (1)	52. (1)	235. (2)	106. (4)	126. (4)	23. (4)	490. (4)
76	4200	34.04	118.24	50. (1)		196. (2)				
79	4200	34.15	118.25	3. (1)		60. (1)				
80	4200	34.15	118.25	36. (1)		152. (1)				
82	4200	34.14	117.85					92. (2)		945. (4)
84	4200	33.83	118.32	31. (1)		154. (1)				
85	4200	33.83	118.32	20. (1)		139. (1)				
86	4200	34.14	117.85	41. (1)		199. (2)				
87	4200	34.09	117.15	61. (1)		264. (3)				
88	4200	33.92	118.02	173. (1)	65. (2)				17. (4)	
89	4200	34.09	117.15							817. (4)
90	4200	33.92	118.02					135. (4)		470. (4)
91	4320	36.96	120.06			224. (2)	92. (3)			
92	4400	37.97	122.52			87. (1)	41. (1)	55. (1)	10. (2)	196. (3)
93	4540	39.44	123.81			430. (4)	96. (4)			
94	4600	37.29	120.47			147. (1)	76. (3)		9. (2)	216. (4)
95	4600	37.06	120.85			146. (1)	69. (2)			
96	4740	41.48	120.54			169. (1)				
97	4860	36.60	121.90			37. (1)		28. (1)	6. (1)	
98	4860	36.51	121.44			114. (1)	53. (1)			216. (4)
100	4860	36.67	121.64			179. (1)	75. (2)	36. (1)	6. (1)	118. (1)
101	5020	38.26	122.30	54. (1)	11. (1)	99. (1)	54. (1)	49. (1)	8. (2)	314. (4)
102	5440	33.82	117.91	99. (1)	18. (1)	209. (2)	101. (4)	101. (3)	20. (4)	333. (4)
103	5440	33.63	117.92	81. (1)		168. (1)	74. (2)	58. (1)	25. (4)	255. (4)
104	5440	33.78	117.95	46. (1)		182. (1)				
105	5440	33.59	117.69	23. (1)		118. (1)			6. (1)	372. (4)
106 *	5440	0.0	0.0			163. (1)				
108	5440	33.75	117.87	20. (1)		98. (1)				

Table IX.15. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
109 *	5440	0.0	0.0	9. (1)						
110	5440	33.92	117.95	94. (1)	23. (1)	219. (2)	111. (4)	121. (3)	19. (4)	549. (4)
111	6420	33.71	116.22			312. (3)	135. (4)	33. (1)	10. (2)	372. (4)
112	6420	33.96	117.41							686. (4)
113	6420	33.72	116.97							314. (4)
115	6420	33.91	117.40			251. (2)	127. (4)		14. (4)	
116	6420	33.96	117.41	75. (1)				58. (1)		
117	6420	33.85	116.54			147. (1)	56. (1)		3. (1)	412. (4)
118	6420	33.95	117.59						10. (3)	529. (4)
119	6420	33.96	117.41			364. (4)	149. (4)			
120	6420	33.91	117.40					104. (3)		529. (4)
121	6420	33.96	117.41	76. (1)					13. (4)	
122	6600	38.61	121.39							333. (4)
123	6600	38.57	121.49			115. (1)	60. (2)	48. (1)	11. (3)	333. (4)
124	6600	38.56	121.46	6. (1)		58. (1)				
125	6600	38.56	121.46	16. (1)		86. (1)				
127	6700	34.53	117.29					56. (1)	5. (1)	294. (4)
128	6700	34.06	117.64						14. (4)	
129	6700	34.05	117.19						9. (2)	
131	6700	34.11	117.48	134. (1)	42. (1)			78. (2)		725. (4)
134	6700	34.11	117.48	117. (1)					8. (2)	
135	6700	34.10	117.29	14. (1)		222. (2)				
137	6700	34.10	117.29					76. (2)		
138	6700	34.07	117.63					91. (2)		
140	6700	34.07	117.63							764. (4)
140	6700	34.07	117.63							784. (4)
141	6700	34.10	117.29			261. (3)	103. (4)			
142	6700	34.08	117.65			262. (3)				
143	6700	34.08	117.65			241. (2)				
145	6700	34.07	117.63						10. (2)	
147	6700	34.10	117.29							745. (4)
148	6700	33.98	117.69						10. (2)	
150	6700	33.98	117.69							647. (4)
152	6700	34.39	117.02					39. (1)	5. (1)	216. (4)
153	6700	34.10	117.29	7. (1)		120. (1)				
154	6700	34.10	117.29	106. (1)	27. (1)				12. (3)	
157	6820	32.71	117.15	12. (1)		135. (1)				
158	6820	32.71	117.15	46. (1)	12. (1)	144. (1)	74. (2)		15. (4)	
159	6820	32.63	117.06	28. (1)	4. (1)	119. (1)	65. (2)	64. (1)	5. (1)	353. (4)
160	6820	32.79	116.96			163. (1)	85. (3)			
162	6820	32.73	117.06							274. (4)
163	6820	32.71	117.15	11. (1)		94. (1)				
164	6820	32.71	117.15							294. (4)
165	6820	33.19	117.38	20. (1)		140. (1)	80. (3)		6. (1)	353. (4)
166	6820	33.21	117.25	21. (1)		133. (1)				
167	6820	32.58	117.12	15. (1)					6. (1)	372. (4)

Table IX.15. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
168	6820	33.13	117.07					72. (1)		510. (4)
169	6820	32.79	116.96	52. (1)	16. (1)				14. (4)	274. (4)
170	6820	33.13	117.07			171. (1)	71. (2)		11. (3)	
171	6820	32.58	117.12			269. (3)				98. (1)
172	6880	37.78	122.42	33. (1)		100. (1)	49. (1)	62. (1)	12. (3)	
174	6880	37.78	122.42							
176	6880	37.78	122.42			81. (1)				
178	6880	37.78	122.42	20. (1)		77. (1)				
179	6880	37.78	122.42	24. (1)						
180	6960	37.95	121.27			653. (4)		50. (1)	13. (4)	274. (4)
182	7060	35.28	120.66			75. (1)	45. (1)	37. (1)	9. (2)	176. (3)
183	7120	37.48	122.20			92. (1)	46. (1)	72. (1)	11. (3)	255. (4)
184	7120	37.53	122.35			86. (1)	35. (1)		9. (2)	118. (1)
185	7220	34.42	119.70					61. (1)	16. (4)	
186	7220	34.41	119.77							431. (4)
187	7220	34.42	119.70			124. (1)	63. (2)			333. (4)
188	7260	37.38	122.03			88. (1)	44. (1)	76. (2)	11. (3)	274. (4)
189	7260	37.29	121.89					75. (1)		372. (4)
191	7260	37.34	121.89	9. (1)		82. (1)				
192	7260	37.29	121.89			122. (1)	65. (2)		16. (4)	
193	7260	37.34	121.89	21. (1)		142. (1)				
195	7260	37.17	121.98							294. (4)
199	7300	36.99	122.02			48. (1)				137. (2)
200	7580	40.59	122.39			68. (1)			6. (1)	216. (4)
201	7580	40.55	122.38			126. (1)	47. (1)			
202	7580	40.47	122.29			176. (1)				
203	7680	41.73	122.63			86. (1)	40. (1)			
204	7700	38.05	122.15	38. (1)	4. (1)					
205	7700	38.11	122.24	31. (1)		118. (1)			11. (3)	216. (4)
207	7760	38.39	122.70	20. (1)	3. (1)	98. (1)	38. (1)	40. (1)	9. (2)	176. (3)
209	8020	37.64	121.00			193. (1)	96. (4)	53. (1)	11. (3)	235. (4)
210	8120	39.14	121.62			155. (1)			7. (1)	196. (3)
211	8200	40.17	122.25			125. (1)				
212	8340	36.33	119.29			245. (2)	142. (4)	48. (1)	17. (4)	216. (4)
213	8500	34.11	119.10			95. (1)	58. (2)	16. (1)		372. (4)
214	8500	34.45	119.24			121. (1)				392. (4)
215	8500	34.15	119.20			135. (1)				137. (2)
216	8500	34.22	119.04			109. (1)				235. (4)
217	8500	34.19	118.87	32. (1)		137. (1)				
218	8500	34.19	118.86			158. (1)	82. (3)			294. (4)
219	8500	34.35	119.06			130. (1)	89. (3)			333. (4)
220	8500	34.28	118.68			150. (1)	87. (3)			274. (4)
221	8840	38.55	121.74			127. (1)	64. (2)		12. (3)	216. (4)

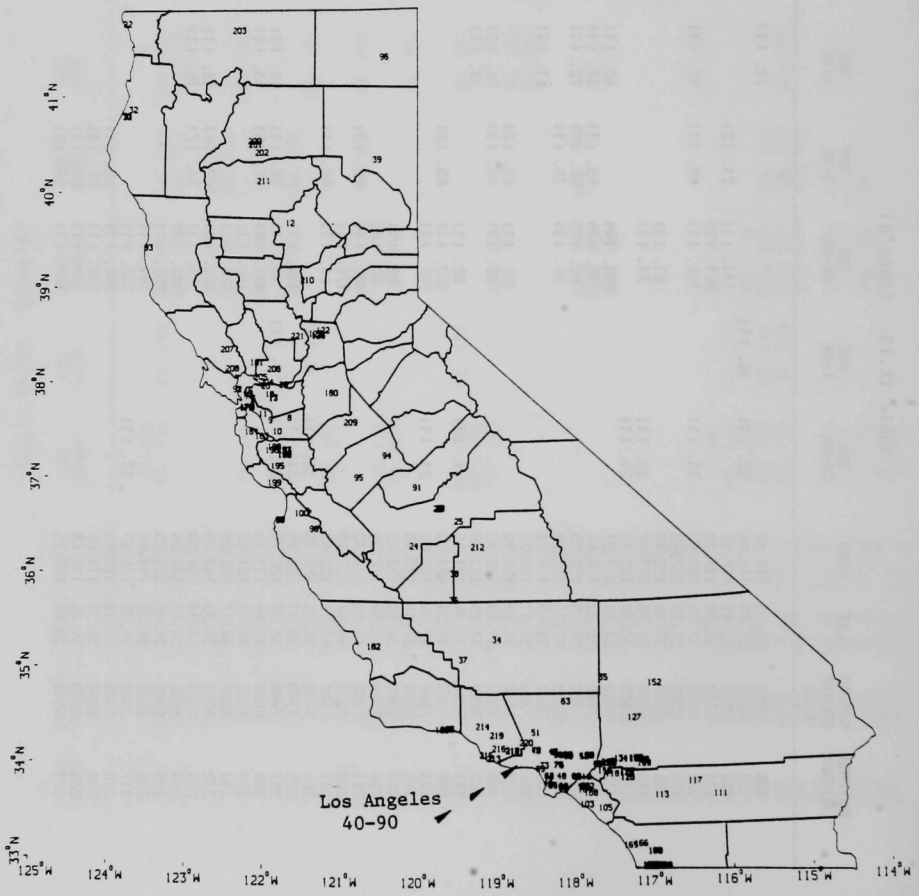


Fig. IX.97. California: Locations of SAROAD Monitors
(See Table IX.15 for Monitor Numbers)

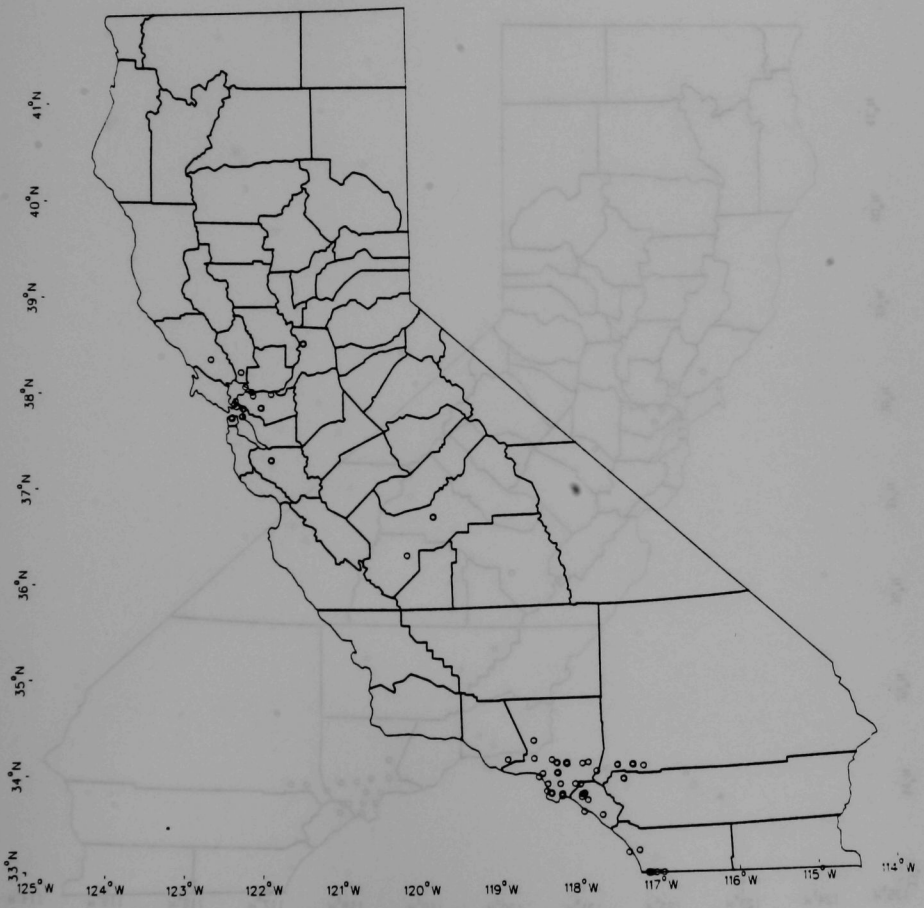


Fig. IX.98. California: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

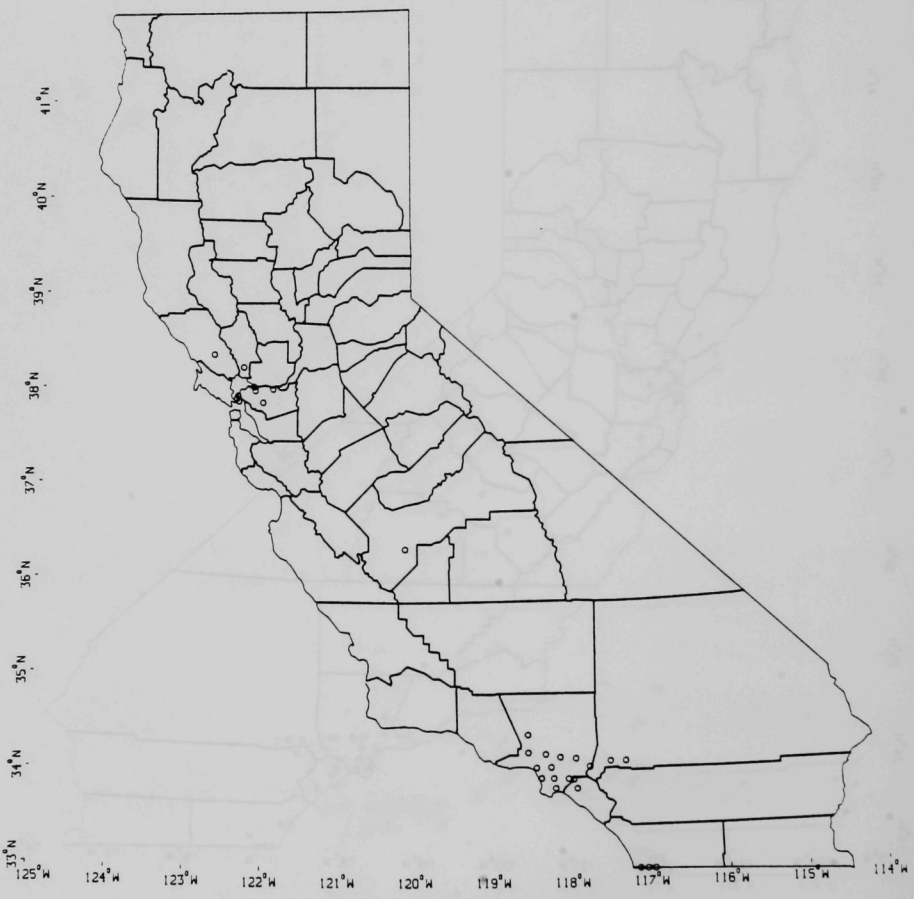


Fig. IX.99. California: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

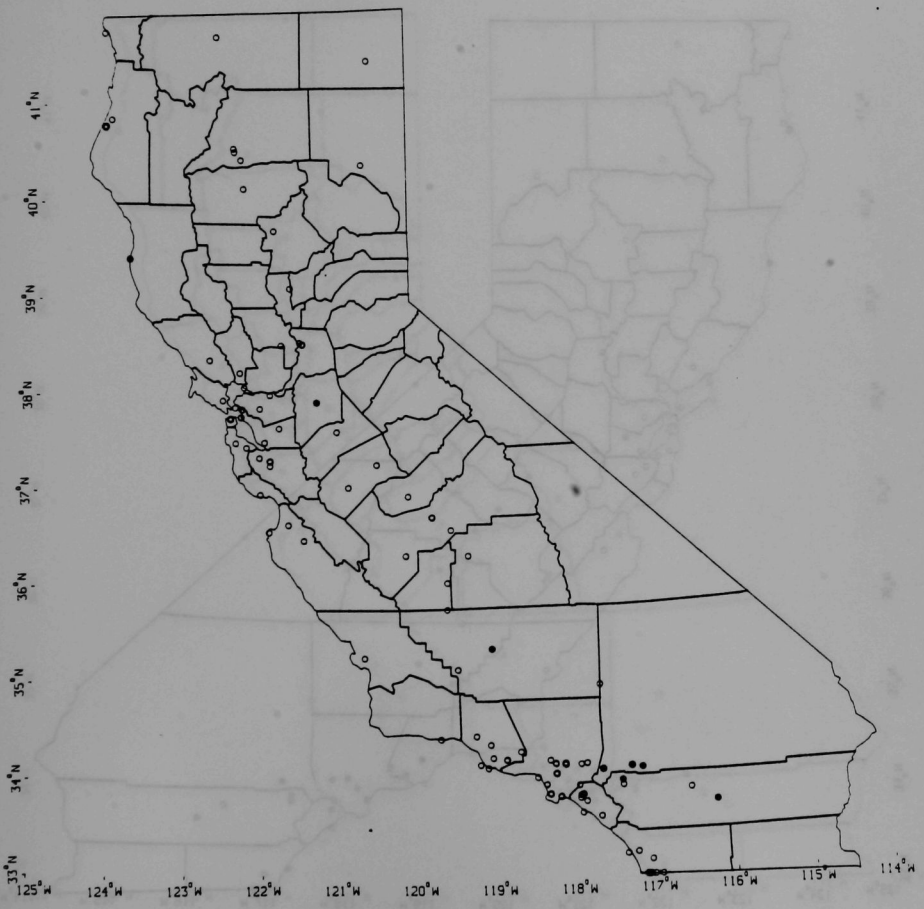


Fig. IX.100. California: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

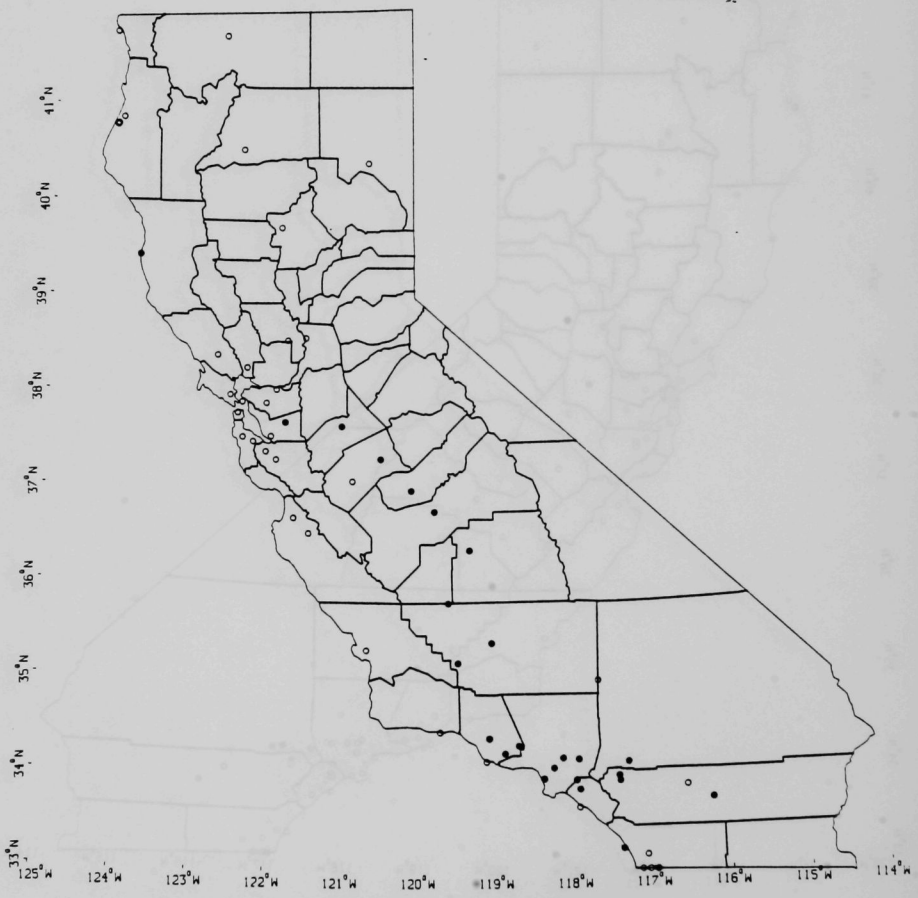


Fig. IX.101. California: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

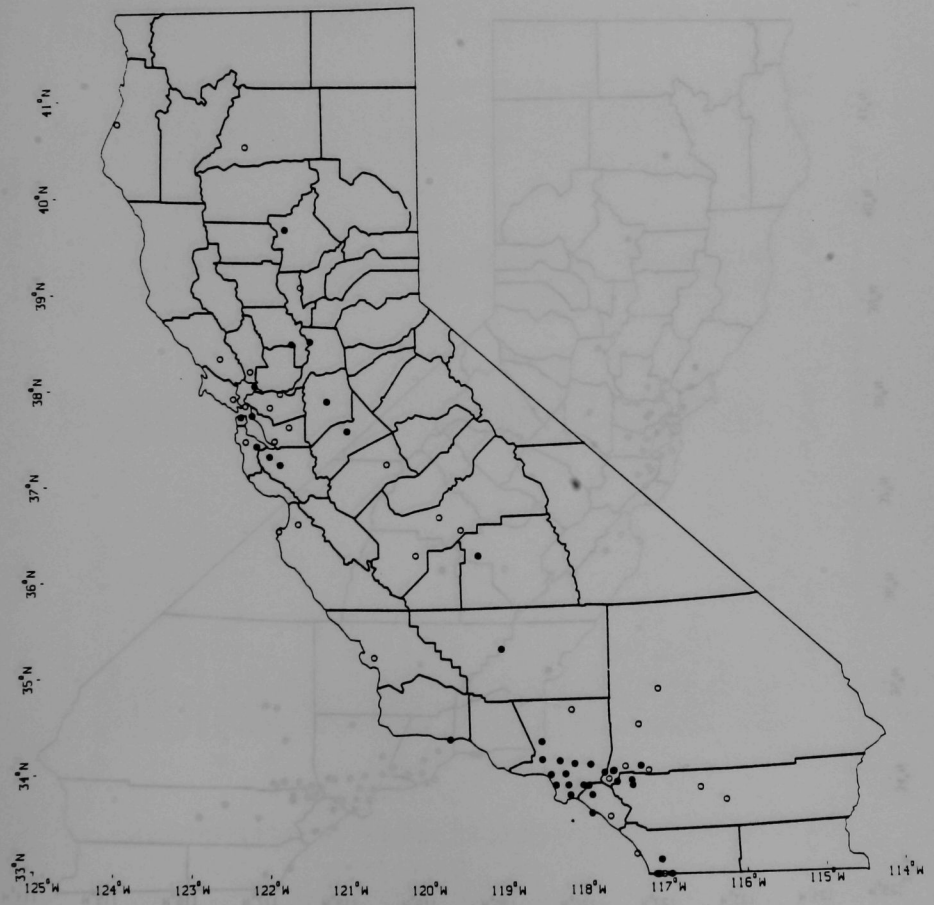


Fig. IX.102. California: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

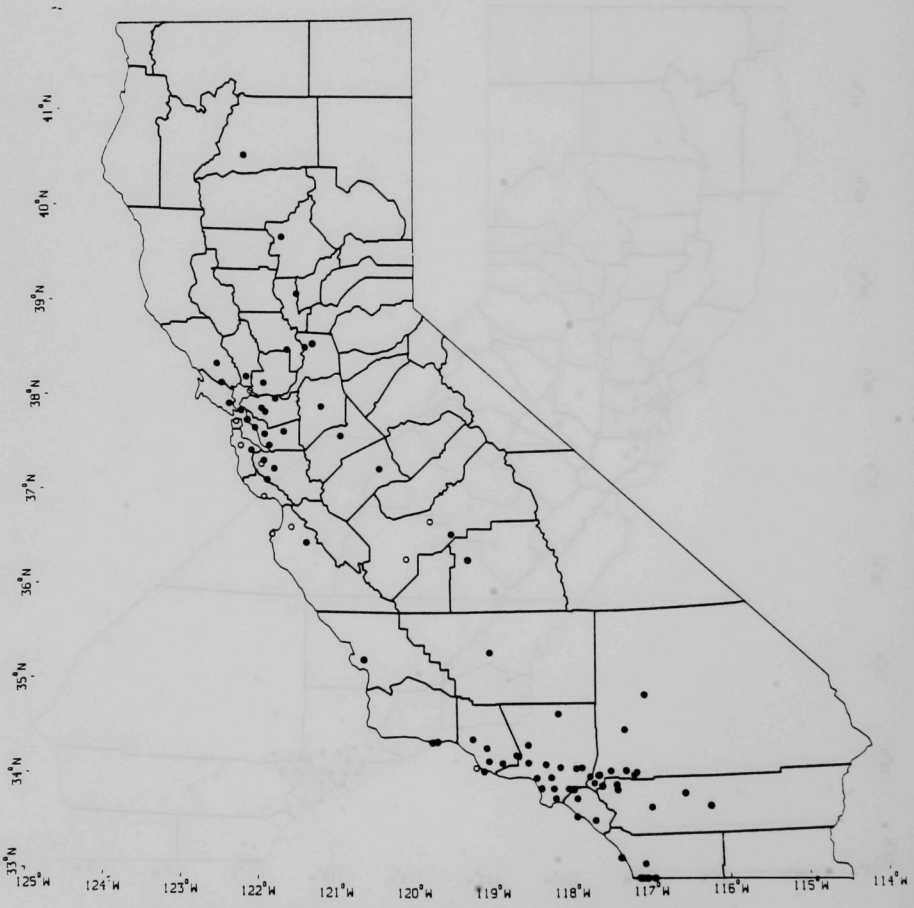


Fig. IX.103. California: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

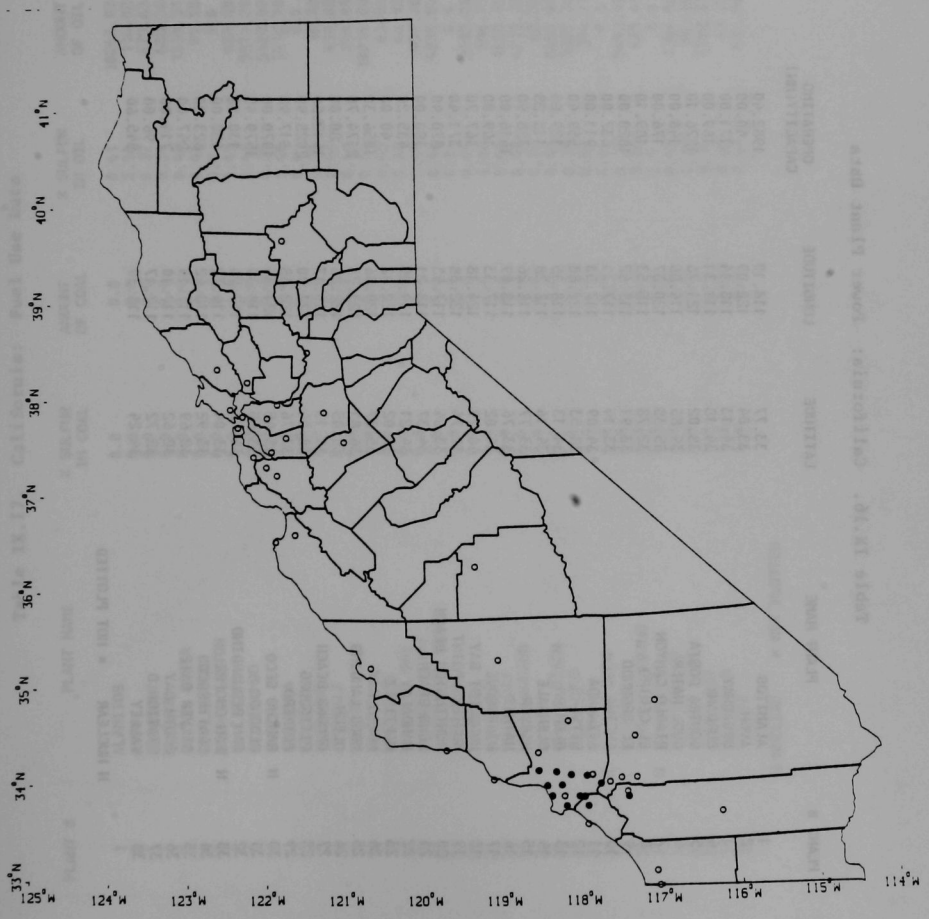


Fig. IX.104. California: Monitors Reporting Adequate Data on Annual Average NO_x; Violations Shown by Shaded Circles

Table IX.16. California: Power Plant Data

PLANT #		PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1		ALAMITOS	33.77	118.10	1982.40	0.0
2		AVON	33.04	122.09	40.00	0.0
3		BROADWAY	34.13	118.14	171.00	0.0
4		BURBANK	34.18	118.31	169.00	0.0
5		CONTRA COSTA	38.02	121.76	1276.10	0.0
6		COOL WATER	34.86	116.86	146.00	0.0
7		DIABLO CANYON	35.38	120.37	176.00	0.0
8		EL CENTRO	32.78	115.53	189.10	0.0
9		EL SEGUNDO	33.91	118.42	1020.00	0.0
10		ENCINA	33.14	117.34	637.00	0.0
11		ETIWANDA	34.09	117.53	911.00	0.0
12		GEYSERS	38.53	122.83	559.40	0.0
13		GLENARM	34.13	118.15	129.00	0.0
14		GLENDALE	34.16	118.28	118.28	0.0
15		HARBOR	33.77	118.26	388.90	0.0
16		HAYNES	33.76	118.09	1616.00	0.0
17		HIGHGROVE	34.02	117.33	169.00	0.0
18		HUMBOLDT BAY	40.79	124.18	167.70	0.0
19		HUNTERS POINT	37.74	122.38	371.40	0.0
20		HUNTINGTON BEACH	33.64	117.93	870.40	0.0
21		LONG BEACH	34.37	118.21	180.00	0.0
22		MANDALAY	34.21	119.25	435.20	0.0
23		MARTINEZ	38.02	122.12	40.00	0.0
24		MORRO BAY	35.37	120.86	1056.30	0.0
25		MOSS LANDING	36.81	121.78	2174.70	0.0
26		OLEUM	38.05	122.26	80.00	0.0
27		ORMOND BEACH	34.13	119.17	1612.80	0.0
28		PITTSBURG	38.04	121.90	2028.90	0.0
29		POTRERO	37.76	122.38	317.90	0.0
30	N	RANCHO SECO	38.45	121.34	1070.00	0.0
31		REDONDO	33.85	118.39	1579.45	0.0
32		SAN BERNARDINO	34.08	117.24	130.56	0.0
33	N	SAN ONOFRE	33.04	116.72	450.00	0.0
34		SCATTERGOOD	33.92	118.42	823.20	0.0
35		SILVER GATE	32.69	117.14	247.00	0.0
36		SOUTH BAY	32.62	117.10	714.00	0.0
37		STATION B	32.72	117.17	96.00	0.0
38		VALLEY	34.24	118.39	545.60	0.0

N NUCLEAR * NOT PLOTTED

Table IX.17. California: Fuel Use Data

PLANT #		PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1		ALAMITOS	0.0	0.0	0.41	10263.00	10202.00
2		AVON	0.0	0.0	2.50	116.02	3826.79
3		BROADWAY	0.0	0.0	0.37	675.63	794.10
4		BURBANK	0.0	0.0	0.39	688.30	1074.30
5		CONTRA COSTA	0.0	0.0	0.40	1330.51	21934.57
6		COOL WATER	0.0	0.0	0.43	99.50	9207.20
7		DIABLO CANYON	0.0	0.0	0.0	0.0	0.0
8		EL CENTRO	0.0	0.0	1.45	428.49	3583.59
9		EL SEGUNDO	0.0	0.0	0.41	5579.20	4320.53
10		ENCINA	0.0	0.0	0.35	5420.00	2619.00
11		ETIWANDA	0.0	0.0	0.40	3716.70	8891.80
12		GEYSERS	0.0	0.0	0.0	0.0	0.0
13		GLENARM	0.0	0.0	0.30	16.30	143.54
14		GLENDALE	0.0	0.0	0.46	638.00	950.00
15		HARBOR	0.0	0.0	0.50	248.00	372.00
16		HAYNES	0.0	0.0	0.50	10734.00	5650.00
17		HIGHGROVE	0.0	0.0	0.45	65.90	227.00
18		HUMBOLDT BAY	0.0	0.0	0.80	66.42	1641.95
19		HUNTERS POINT	0.0	0.0	0.40	457.78	11043.17
20		HUNTINGTON BEACH	0.0	0.0	0.40	4235.00	9525.00
21		LONG BEACH	0.0	0.0	0.0	0.0	0.0
22		MANDALAY	0.0	0.0	0.44	2402.00	4067.00
23		MARTINEZ	0.0	0.0	1.00	206.73	4646.59
24		MORRO BAY	0.0	0.0	0.40	1629.15	21263.90
25		MOSS LANDING	0.0	0.0	0.40	4213.16	52606.93
26		OLEUM	0.0	0.0	0.50	62.36	3639.85
27		ORMOND BEACH	0.0	0.0	0.44	8656.00	822.00
28		PITTSBURG	0.0	0.0	0.30	3527.38	37282.57
29		POTRERO	0.0	0.0	0.40	394.73	8852.37
30	N	RANCHO SECO	0.0	0.0	0.0	0.0	0.0
31		REDONDO	0.0	0.0	0.32	5692.45	17455.17
32		SAN BERNARDINO	0.0	0.0	0.39	451.60	3563.70
33	N	SAN ONOFRE	0.0	0.0	0.0	0.0	0.0
34		SCATTERGOOD	0.0	0.0	0.48	1207.00	10406.00
35		SILVER GATE	0.0	0.0	0.38	148.00	742.00
36		SOUTH BAY	0.0	0.0	0.34	4083.00	8654.00
37		STATION B	0.0	0.0	0.30	61.00	337.00
38		VALLEY	0.0	0.0	0.47	981.00	3380.00

N NUCLEAR * NOT PLOTTED

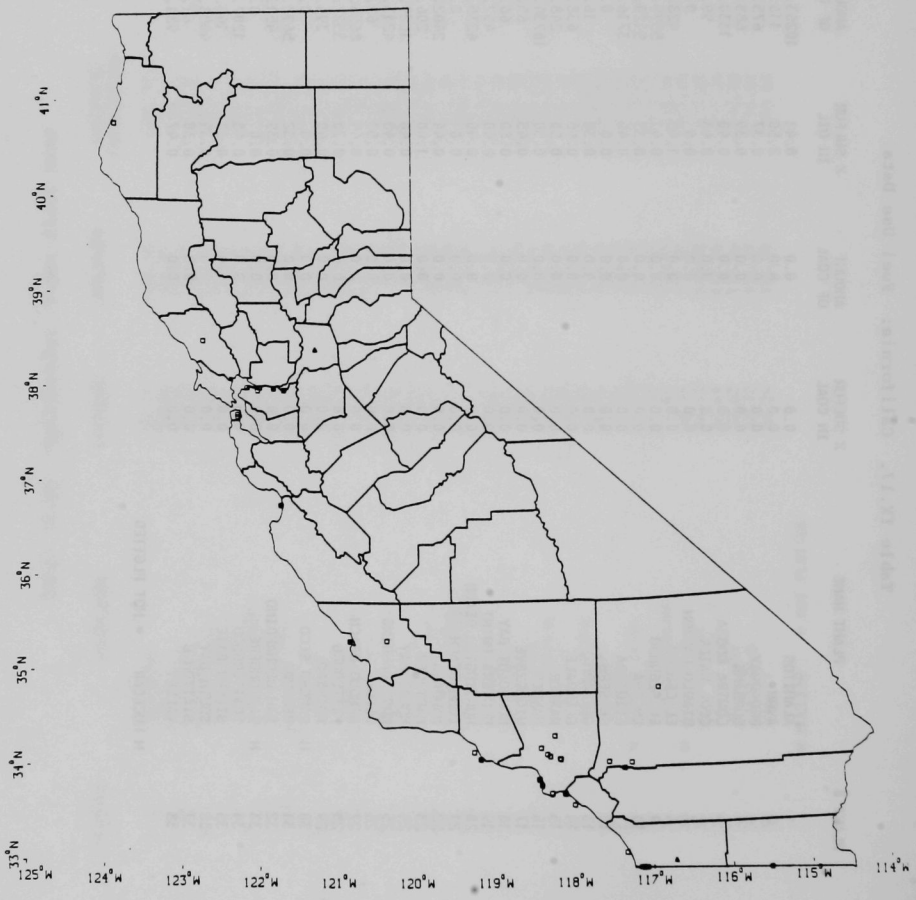


Fig. IX.105. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

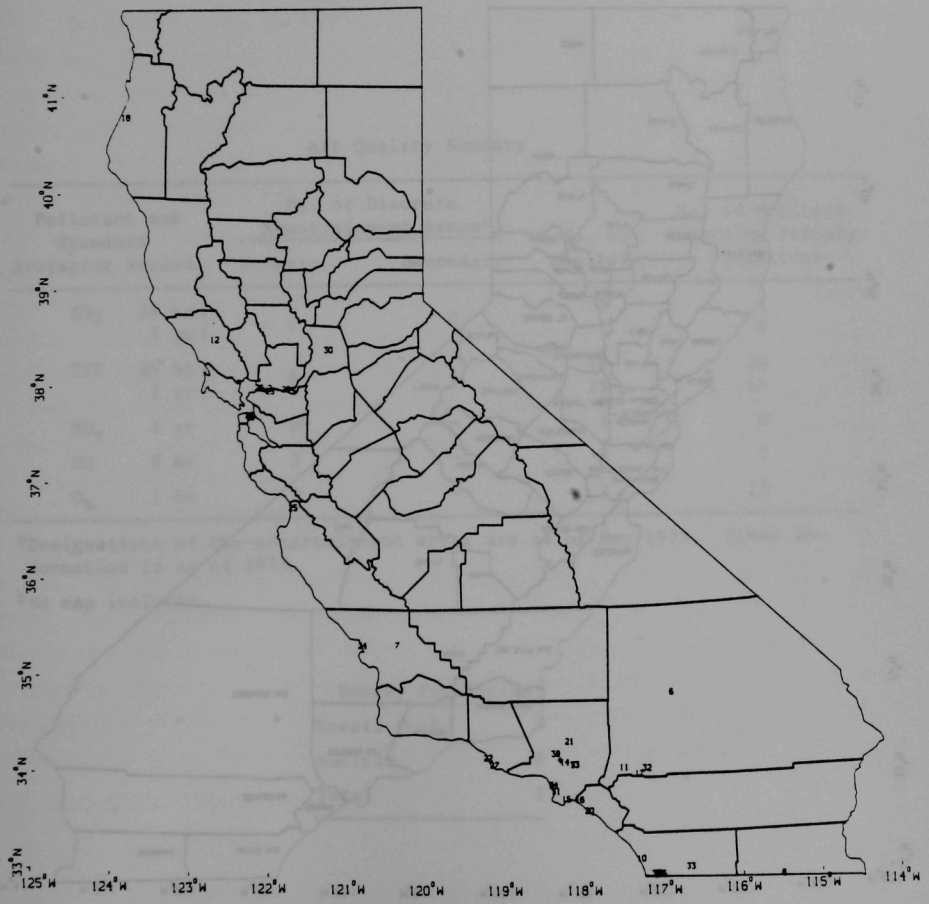


Fig. IX.106. Power Plant Key (See Tables IX.16 and IX.17 for Identification and Fuel Use Data)

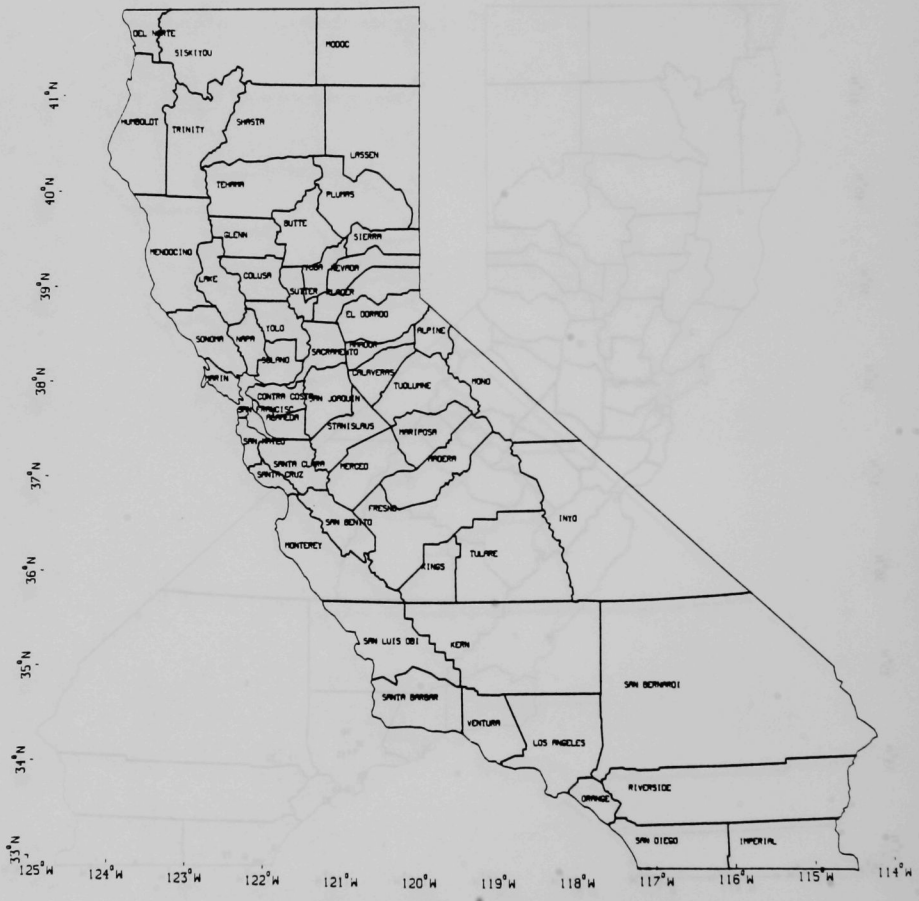


Fig. IX.107. California: Key to Counties

REGION IX: NEVADA

Air Quality Summary

Pollutant and Standard Averaging Period	No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
	Primary	Secondary		
SO_2 24 hr	1	0	4	1
SO_2 1 yr			1	0
TSP 24 hr	6	1	46	10
TSP 1 yr			35	14
NO_x 1 yr	0[b]	-	1	0
CO 8 hr	3	-	8	7
O_x 1 hr	3	-	7	15

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	7
Nuclear	0
Total	7

NEVADA (Official SIP, 1/79)

I. SOURCES OF THE PROBLEM

The EPA designated one area in Nevada as nonattainment for SO_2 -- the Steptoe Valley, which extends into both White Pine and Elko Counties. The state did not agree with the designation. The major source in the area is a Kennecott Copper smelter.

The state designated nonattainment areas in terms of air basins. There are six discrete primary nonattainment areas (seven air basins) -- Winnemucca (Humboldt Co.); Las Vegas Valley (Clark Co.); Carson Desert and Fernley area (contiguous air basins, largely in Churchill Co.); Gabbs Valley (Mineral, Nye and Churchill Cos.); Mason Valley (largely in Lyon Co.); and Truckee Meadows (Washoe Co., around Reno). A secondary nonattainment designation has been assigned to the Clover area and lower Reese Valley (two contiguous air basins covering three counties, Humboldt, Pershing, and Lander). Only two of the air basins have populations greater than 25,000 -- Truckee Meadows (Reno & Sparks) and Las Vegas Valley (Las Vegas). In six of the seven remaining nonattainment air basins (all rural, with population less than 25,000) 60% of the particulate emissions are the result of unpaved roads. In Gabbs Valley, a single stationary source, Basic Refractories, Inc., emits 65% of the man-made particulate load. In the urbanized air basins, Truckee Meadows (Reno) and Las Vegas Valley, fugitive emissions (including resuspended road dust and construction activities) and area emissions make up 90% of TSP levels. In the ozone nonattainment areas surrounding Reno, Carson City, Lake Tahoe, and Las Vegas, automobiles contribute the majority of hydrocarbons, with stationary sources, such as gasoline storage tanks, cutback asphalt, and degreasing operations, providing a much smaller fraction. Motor vehicles additionally contribute 88+% of recorded ambient carbon monoxide concentrations in the Reno, Las Vegas, and Lake Tahoe nonattainment areas.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Obtain EPA approval of existing (1972) strategy for the Kennecott Copper smelter

    a. 35% sulfur capture in sulfuric acid plant

b. Tall stack

c. Supplementary control system

d. Cut in production to reduce emissions by 38%

2. Request 3-year delay to attain secondary standards (Dec. 31, 1985)

B. TSP

1. Urban nonattainment areas (Reno, Las Vegas)

a. Current emission limitations for point sources

b. RACT for fugitive industrial emissions

c. Study, evaluate, and implement fugitive dust control measures

- paving parking lots, alleys, and unpaved roads
- improved and increased street sweeping
- minimize acres cleared for construction at any one time
- stabilize cleared land
- minimize dirt spills on roads
- cover transported dirt and minerals
- avoid soil disruption during severe meteorological conditions

d. Control land use to avoid high concentration and pollutant buildup

e. Implement energy conservation to reduce emissions from fuel combustion

2. Rural areas

a. Road and parking-lot paving

b. Other selected fugitive dust control measures

C. Ozone

1. Federal Motor Vehicle Emissions Control Program

2. Inspection and maintenance of motor vehicles

3. RACT on stationary sources

a. Bulk gasoline terminals, gasoline and crude oil storage

b. Vapor recovery at service stations

c. Ban on cutback asphalt

d. Degreasing

e. Dry cleaning

f. Ban certain uses of oil-based paints

g. Additional sources covered under EPA's control technology guidances

4. Transportation Control Measures

a. Traffic flow improvements through road improvements

b. Parking and traffic controls to reduce congestion and idling

c. Ride sharing for government employees

d. Development of public transit

5. Study, evaluate, and implement land use planning

6. Study, evaluate, and implement energy conservation, particularly for residential heating

D. Carbon Monoxide

1. FMVECP

2. Inspection and maintenance of motor vehicles

3. The ozone transportation control measures

III. NEW SOURCE REVIEW

Nevada will operate a permit system for major new sources of pollutants that will use the emissions offset policy. It is anticipated that a new source will have to obtain emissions offsets from existing sources in a ratio of between 1 and 1.5 to 1.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Existing sources

a. With heat input < 250 MM Btu/hr: 0.7 lb SO_2/MM Btu

b. With heat input > 250 MM Btu/hr: 0.6 lb SO_2/MM Btu

2. New sources burning solid fuel and with heat input > 250 MM Btu/hr: 0.6 lb SO_2/MM Btu

B. TSP

1. Existing sources

   a. With heat input < 10 MM Btu/hr: 0.6 lb PM/MM Btu

   b. With heat input of 4,000 MM Btu/hr: 1.0 lb PM/MM Btu

   c. Interpolate between these limits for sources of intermediate size

   d. With heat input > 4,000 MM Btu/hr: calculated as = $17.0\ Q^{-0.568}$ lb/MM Btu, where Q is heat input in MM Btu/hr

2. New Sources

   a. Where 250 < Q < 8370 MM Btu/hr: 0.10 lb PM/MM Btu

   b. With heat input > 8370 MM Btu/hr: calculated by same equation as in 1.d above

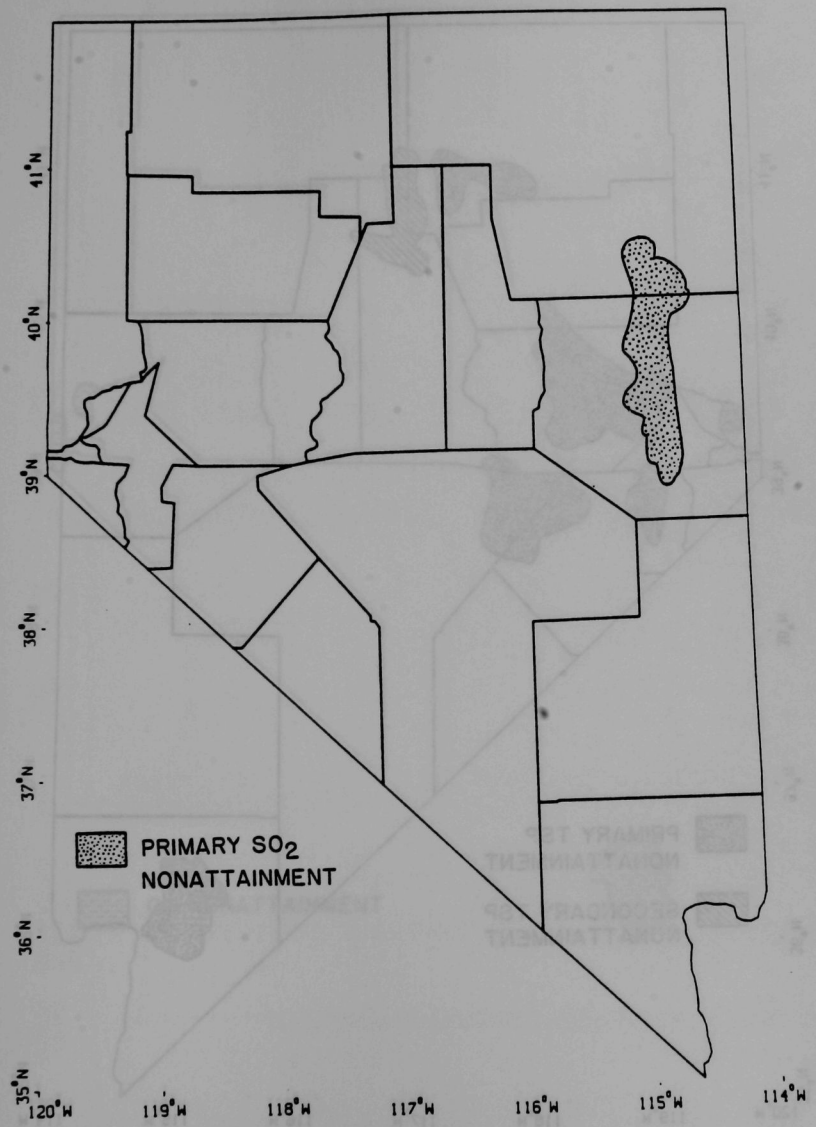


Fig. IX.108. Nevada: SO_2 Nonattainment Areas as Designated May 1979

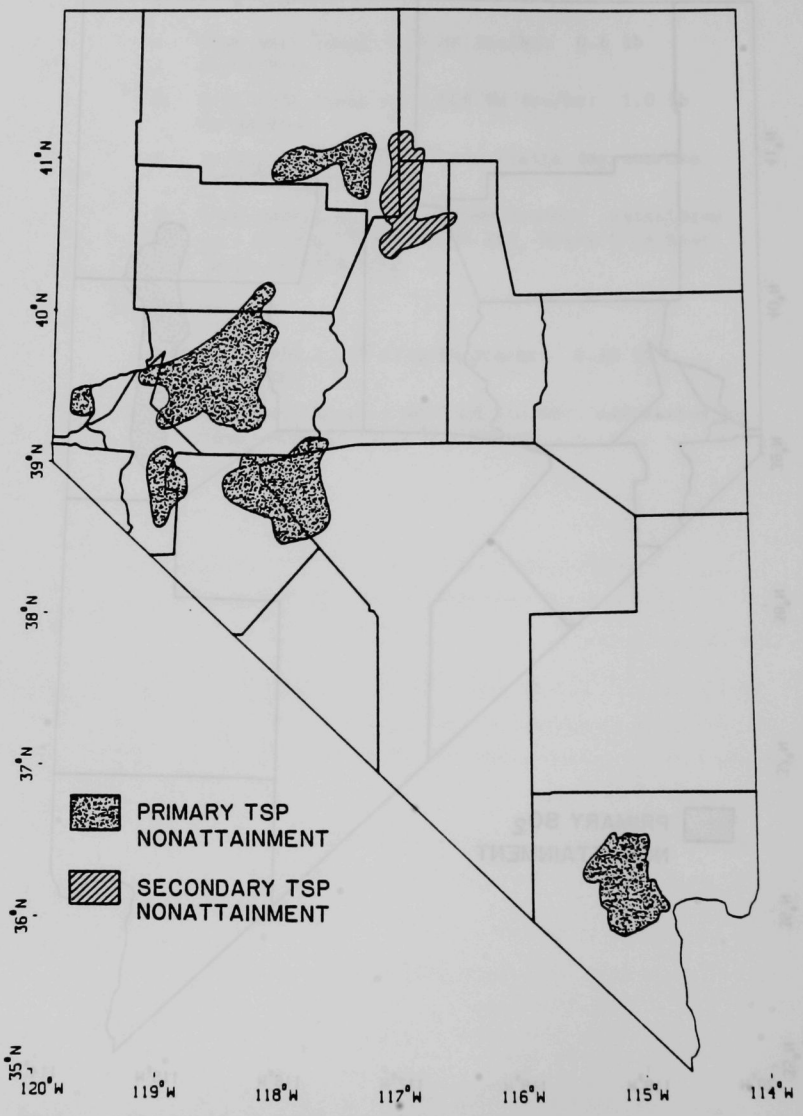


Fig. IX.109. Nevada: TSP Nonattainment Areas as Designated May 1979

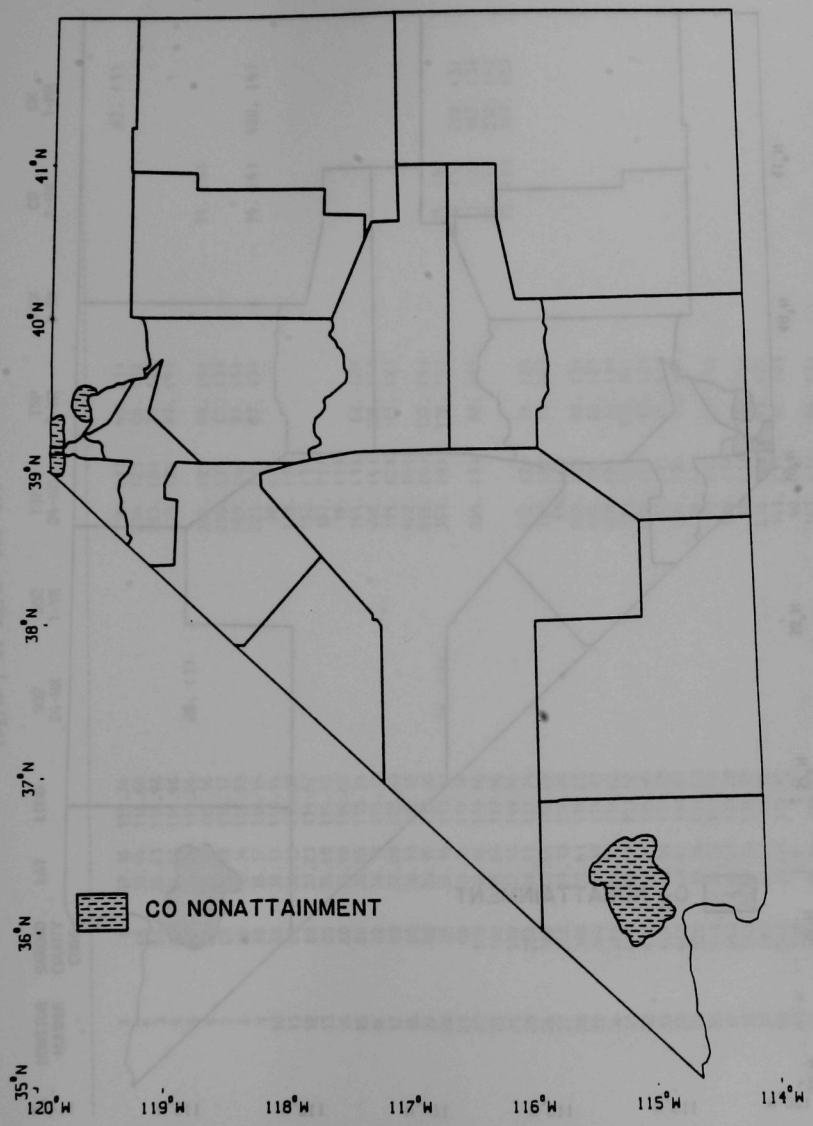


Fig. IX.110. Nevada: CO Nonattainment Areas as Designated May 1979

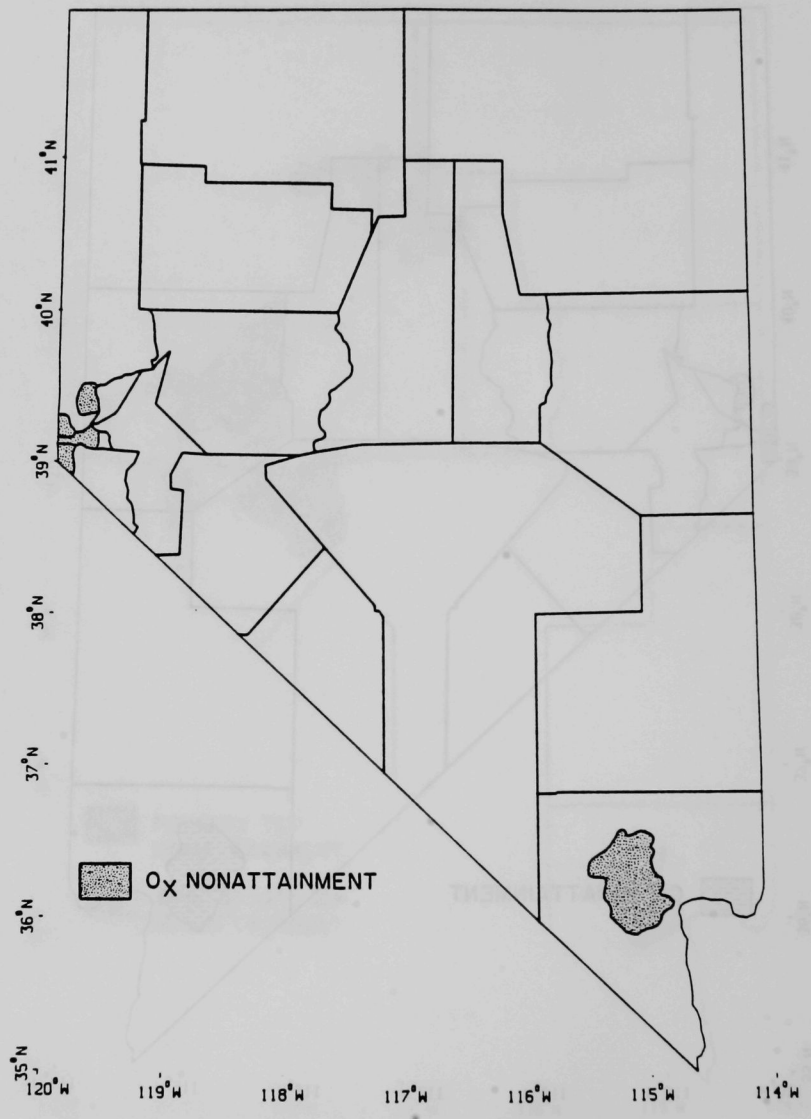


Fig. IX.111. Nevada: O_X Nonattainment Areas as Designated May 1979

Table IX.18. Nevada: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	0	39.16	119.76			114. (1)	48. (1)			47. (1)
2	60	39.44	118.80			236. (2)	86. (3)			
3	80	36.03	114.98			283. (3)	71. (2)			
4	80	36.03	114.98			231. (2)	99. (4)			
5	80	36.06	115.06	28. (1)						
6	80	36.16	115.16			247. (2)	98. (4)		11. (3)	
7	80	36.08	115.17			265. (3)	81. (3)			
8	80	36.14	115.03			569. (4)	97. (4)			
9	80	36.17	115.14			221. (2)	87. (3)		14. (4)	420. (4)
10	80	36.17	115.14			90. (1)				
11	80	36.13	114.89			138. (1)				
12	80	35.21	114.57			152. (1)				
13	80	36.60	114.48			151. (1)				
14	80	35.98	114.83			99. (1)				
15	80	36.25	115.04			194. (1)	62. (2)			
16	80	36.19	115.12			498. (4)	126. (4)			
17	80	36.09	115.03			199. (2)	71. (2)			
18	80	36.10	115.15			422. (4)				
19	80	36.14	115.15			895. (4)	137. (4)			
20	80	36.16	115.11	46. (1)		351. (4)	118. (4)		24. (4)	
21	80	36.16	115.16						4. (1)	200. (3)
22	100	38.96	119.96			104. (1)	52. (1)		13. (3)	167. (3)
23	100	38.96	119.96						28. (4)	212. (4)
24	100	38.96	119.96						13. (4)	167. (3)
25	280	40.97	117.74			242. (2)	78. (3)			
26	300	40.64	116.93			196. (2)	60. (2)			
27	360	39.13	119.24			60. (1)				
28	360	39.61	119.25			234. (2)	76. (3)			
29	360	38.99	119.18			156. (1)	60. (2)			
30	380	38.52	118.62			240. (2)	56. (1)			
31	420	38.88	117.92			281. (3)	102. (4)			
32	420	36.21	115.99			222. (2)	57. (2)			
33	420	38.06	117.22			71. (1)	24. (1)			
34	460	40.07	118.55			296. (3)	31. (1)			
35	520	39.56	119.52			96. (1)				
36	540	39.24	119.94			73. (1)	22. (1)			
37	540	39.63	119.28			109. (1)				
38	540	39.51	119.98			38. (1)	16. (1)			
39	540	39.53	119.76			216. (2)	81. (3)			
40	540	39.53	119.76			141. (1)	66. (2)			
41 *	540	0.0	0.0			40. (1)				
42	540	39.05	119.77			143. (1)	54. (1)			
43	540	39.50	119.79			129. (1)	64. (2)			

Table IX.18. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
44	540	39.50	119.82			78. (1)	42. (1)			
45	540	39.53	119.81	11. (1)	4. (1)			52. (1)	19. (4)	153. (2)
46	540	39.04	119.76			113. (1)	48. (1)			
49	540	39.53	119.81			154. (1)	74. (2)			
50	540	39.53	119.80			193. (1)	73. (2)			
51	540	39.53	119.80			200. (2)	78. (3)			
53	560	39.44	114.75	526. (4)						
54	560	39.00	114.22			3. (1)				
55	560	39.40	114.77			478. (4)	65. (2)			

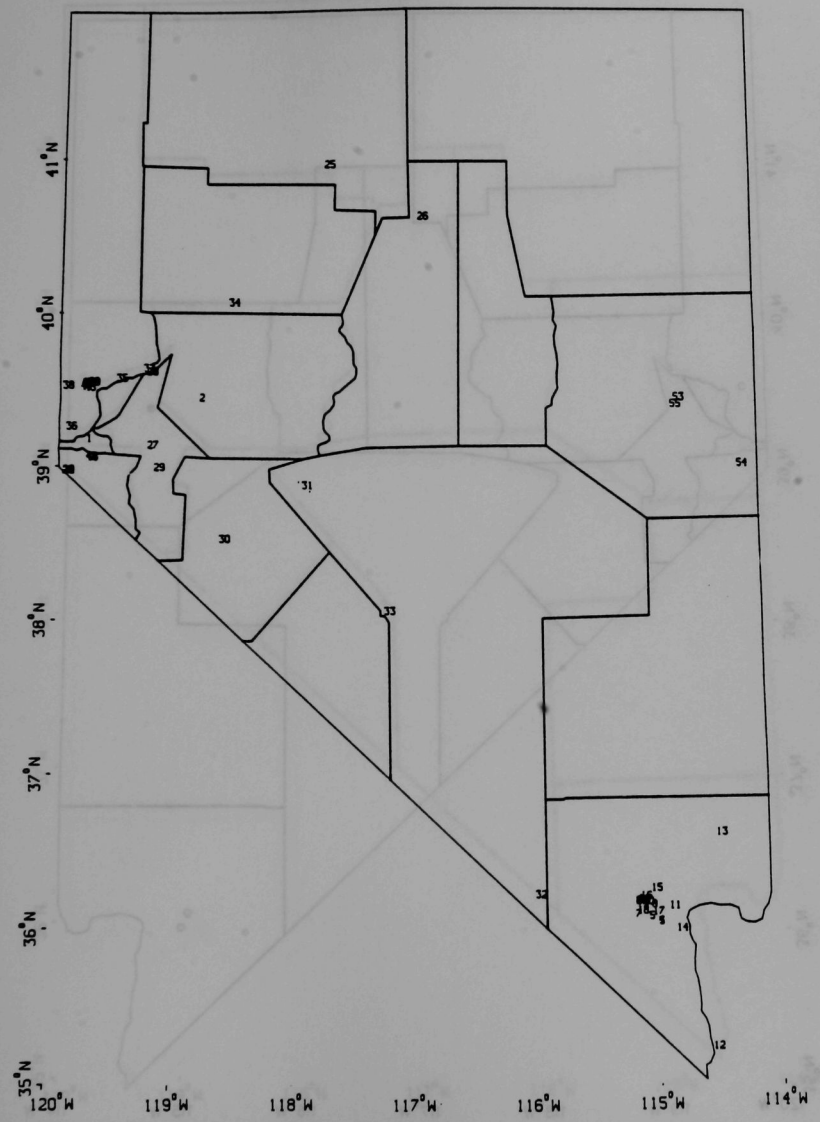


Fig. IX.112. Nevada: Locations of SAROAD Monitors
(See Table IX.18 for Monitor Numbers)

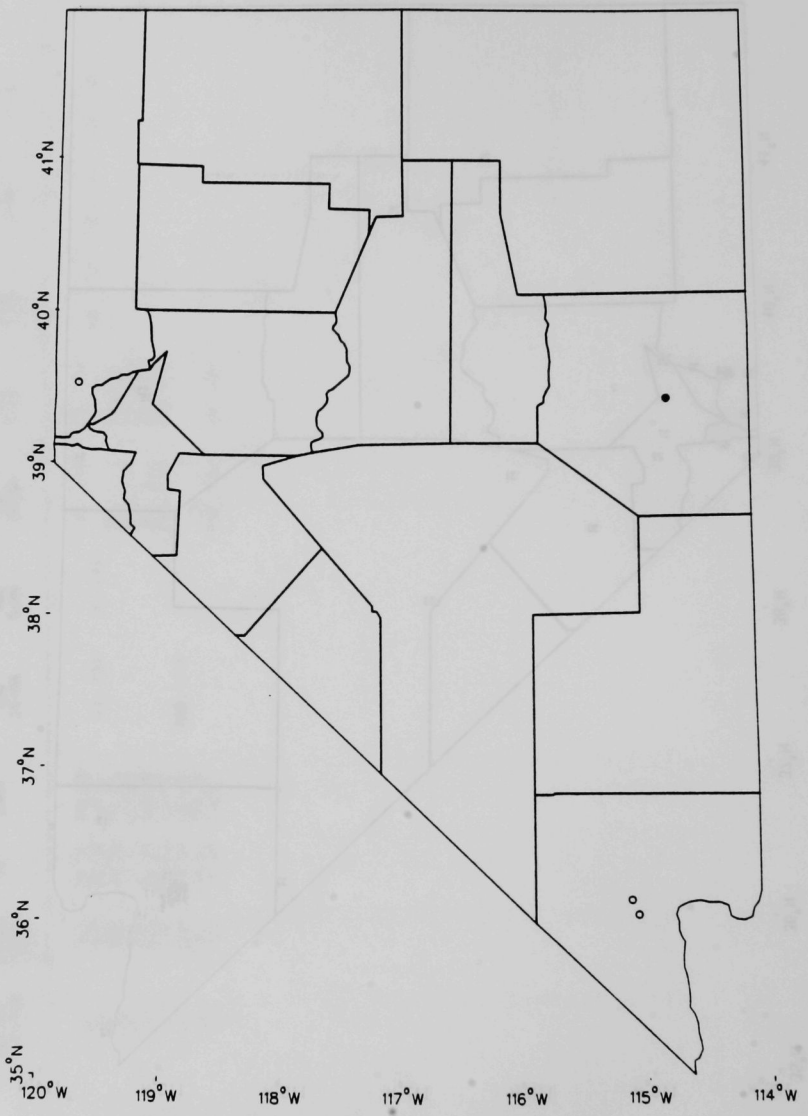


Fig. IX.113. Nevada: Monitors Reporting Adequate Data on 24-hr Average SO_2; Violations Shown by Shaded Circles

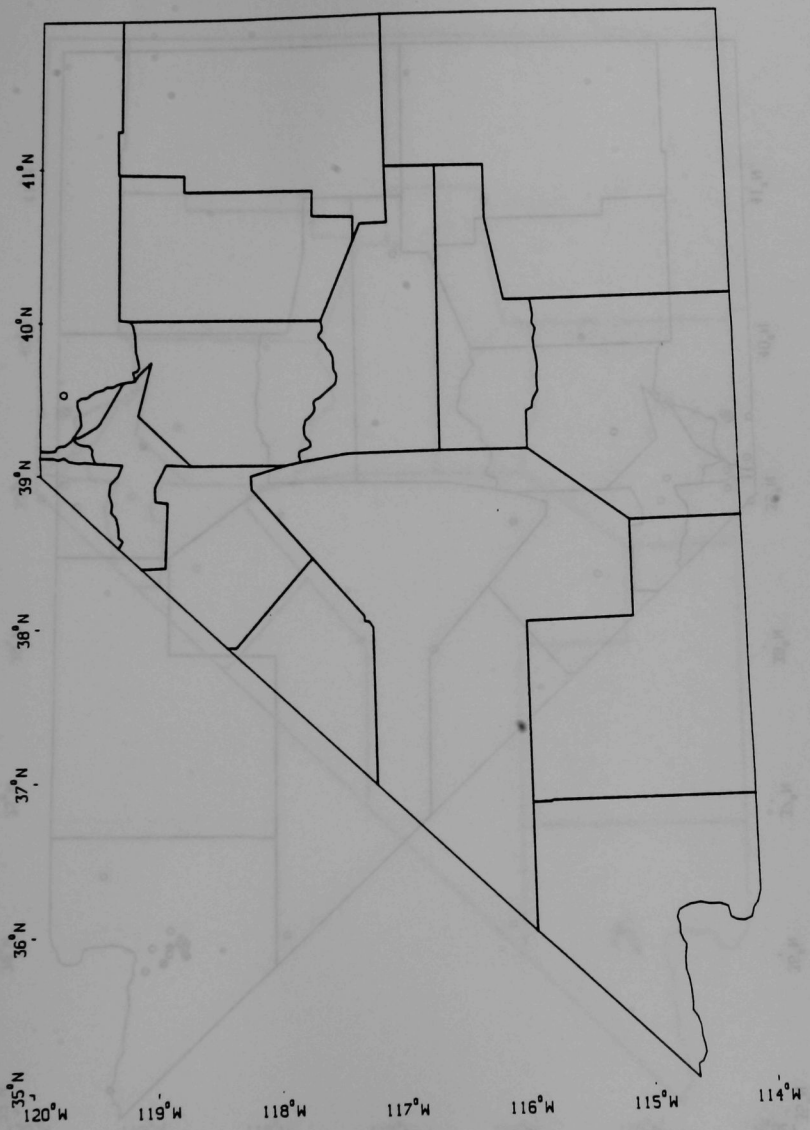


Fig. IX.114. Nevada: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

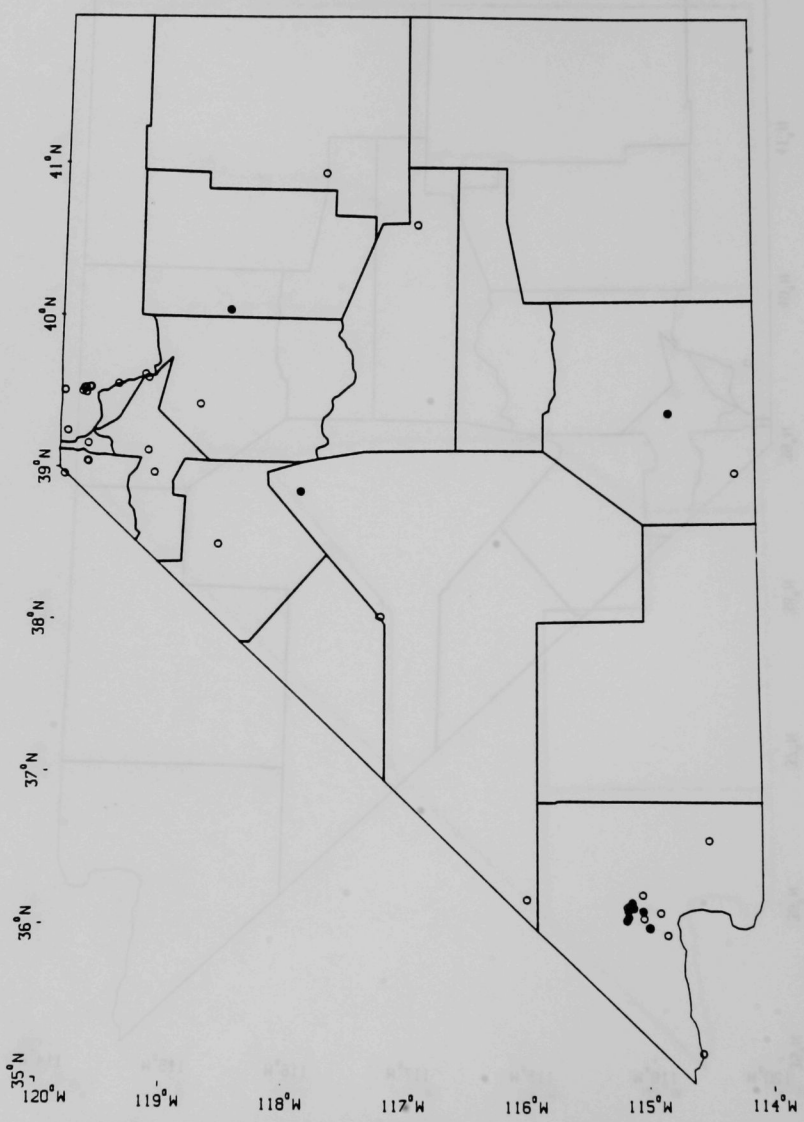


Fig. IX.115. Nevada: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

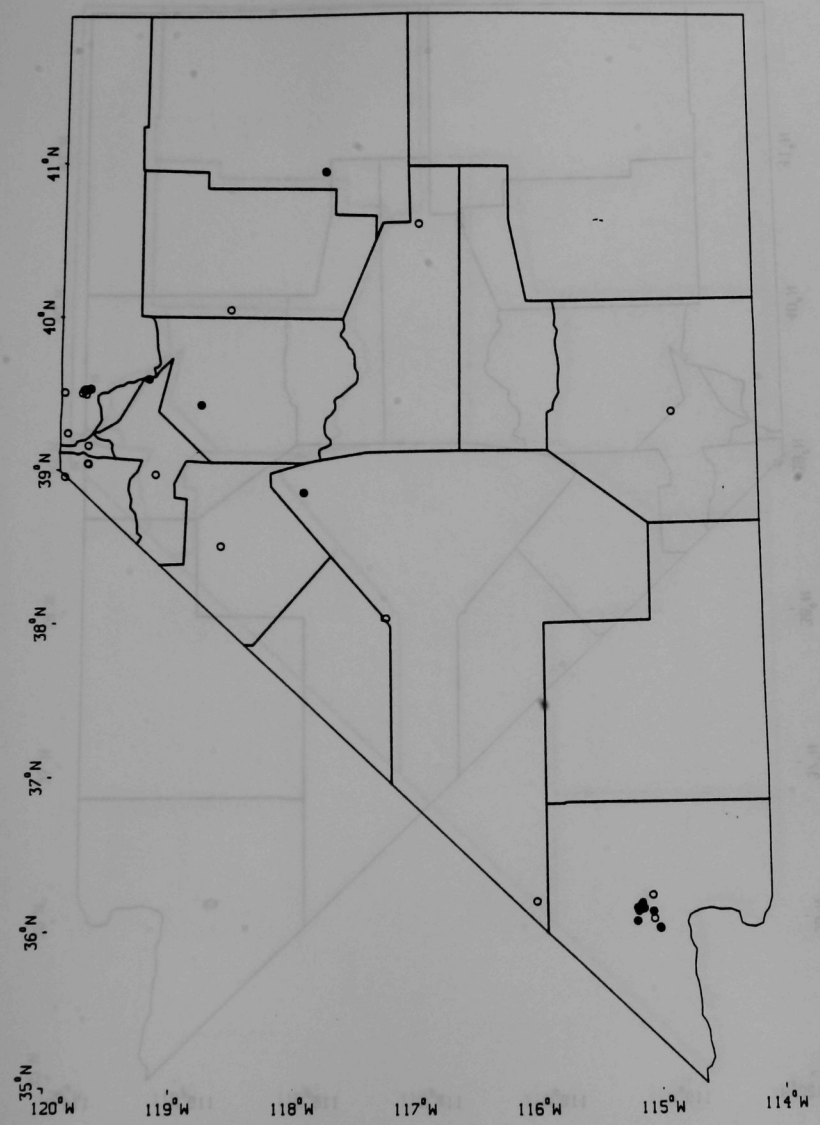


Fig. IX.116. Nevada: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

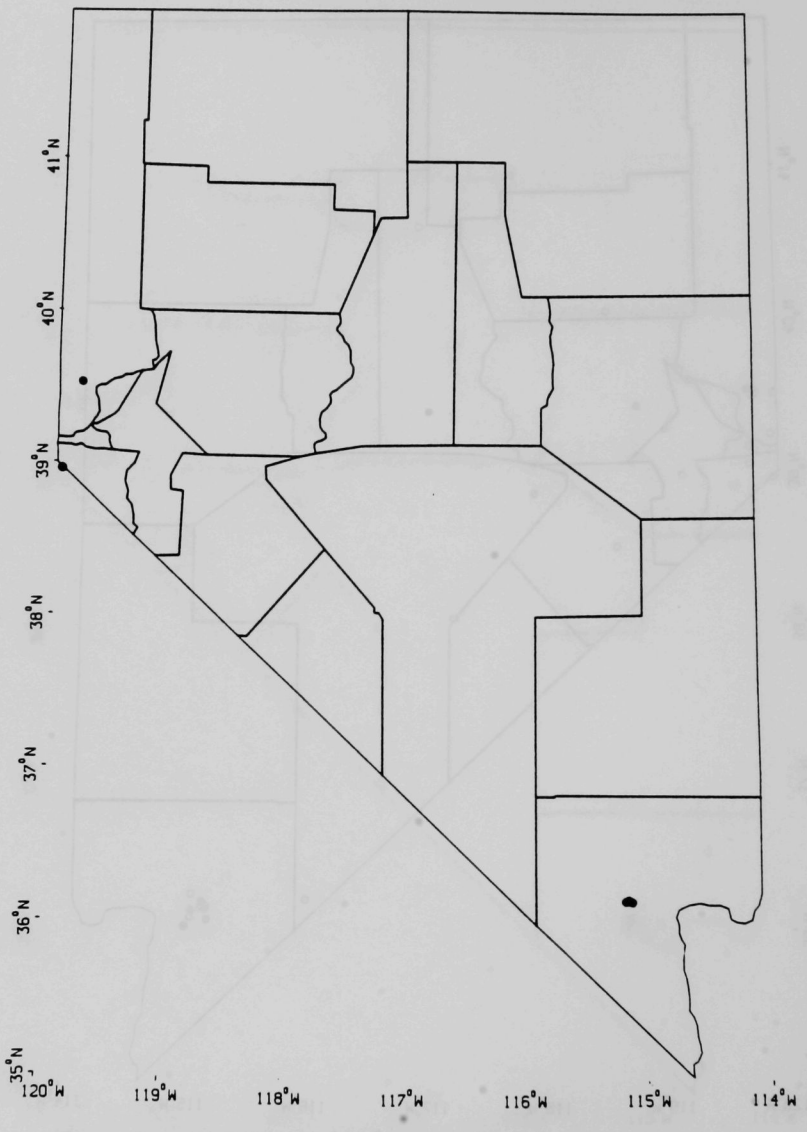


Fig. IX.117. Nevada: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

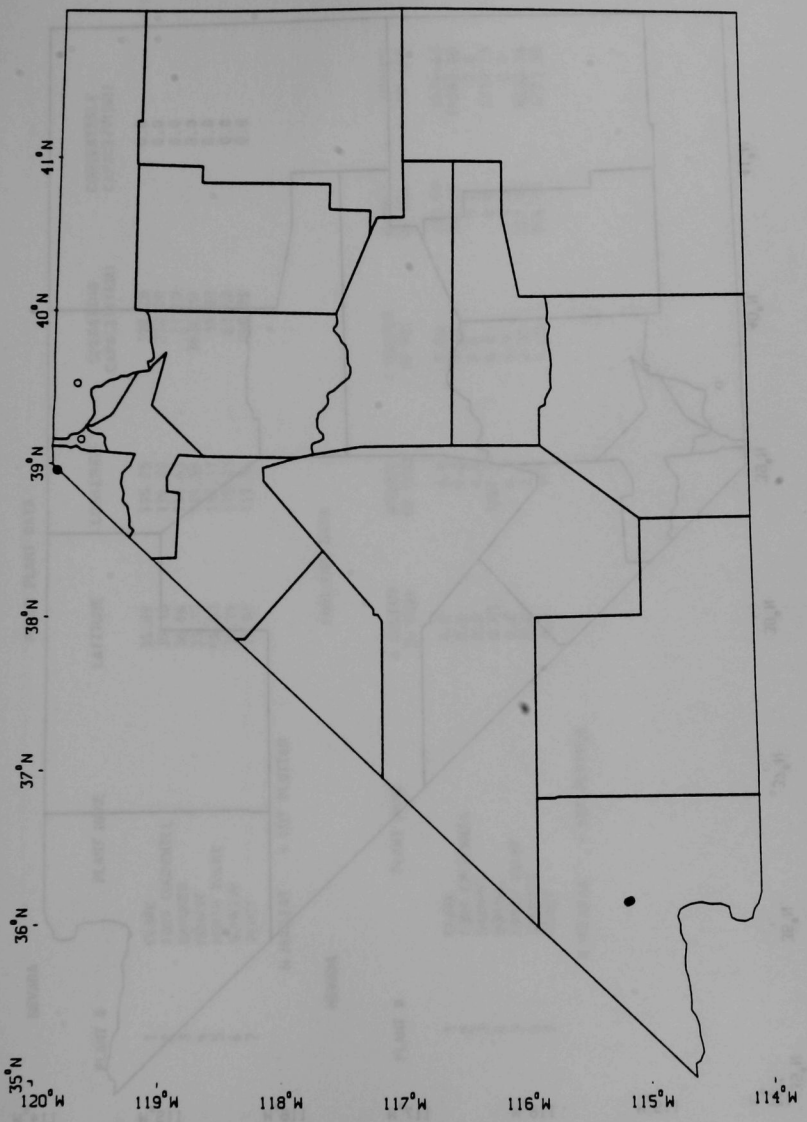


Fig. IX.118. Nevada: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

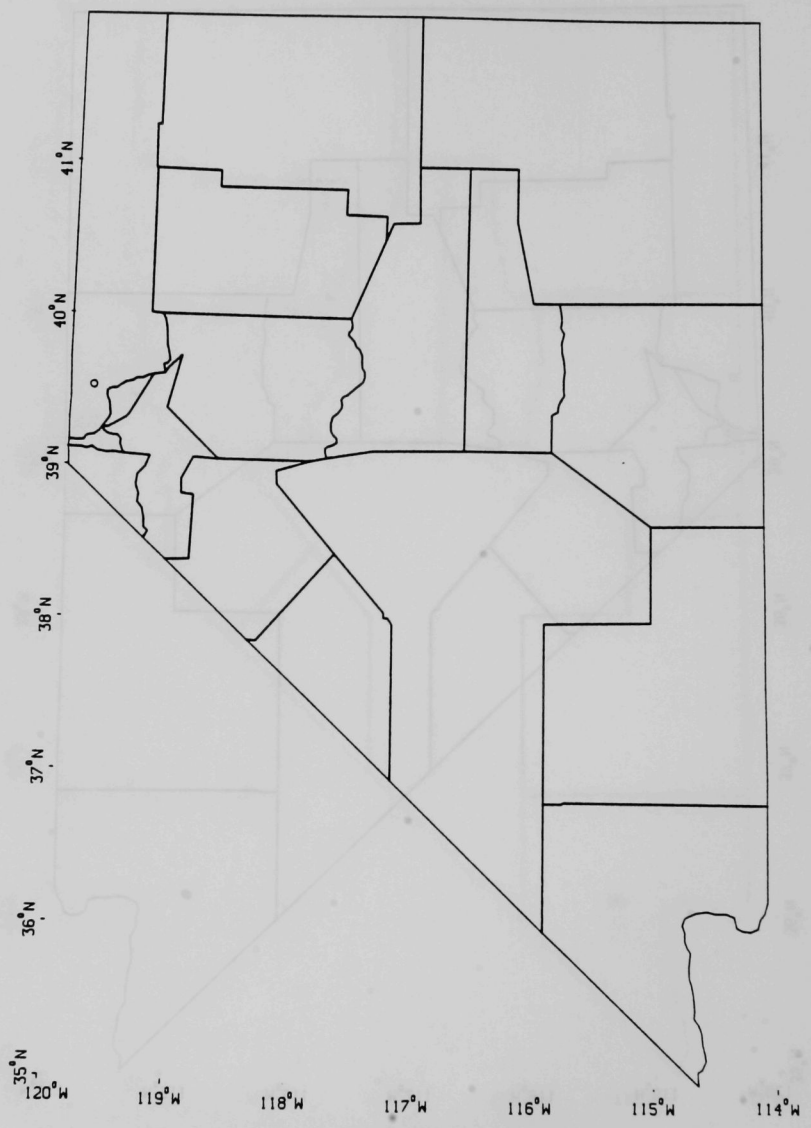


Fig. IX.119. Nevada: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table IX.19. Nevada: Power Plant and Fuel Use Data

NEVADA

POWER PLANT DATA

PLANT #	PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1	CLARK	36.09	115.05	190.28	0.0
2	FORT CHURCHILL	39.16	119.20	220.00	0.0
3	GARDNER	36.66	114.63	21.20	0.0
4	MOHAVE	35.13	114.59	1636.20	0.0
5	NORTH VALMY	40.83	117.17	10.02	0.0
6	SUNRISE	36.14	115.03	81.60	0.0
7	TRACY	39.56	119.52	240.00	0.0

N NUCLEAR * NOT PLOTTED

NEVADA

FUEL-USE DATA

PLANT #	PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1	CLARK	0.0	0.0	0.80	318.99	3674.83
2	FORT CHURCHILL	0.0	0.0	0.82	300.00	10503.00
3	GARDNER	0.0	0.0	0.0	0.0	0.0
4	MOHAVE	0.41	3907.57	0.0	0.0	3739.29
5	NORTH VALMY	0.0	0.0	0.0	0.0	0.0
6	SUNRISE	0.0	0.0	0.35	287.76	2273.78
7	TRACY	0.0	0.0	0.82	346.00	4223.00

N NUCLEAR * NOT PLOTTED

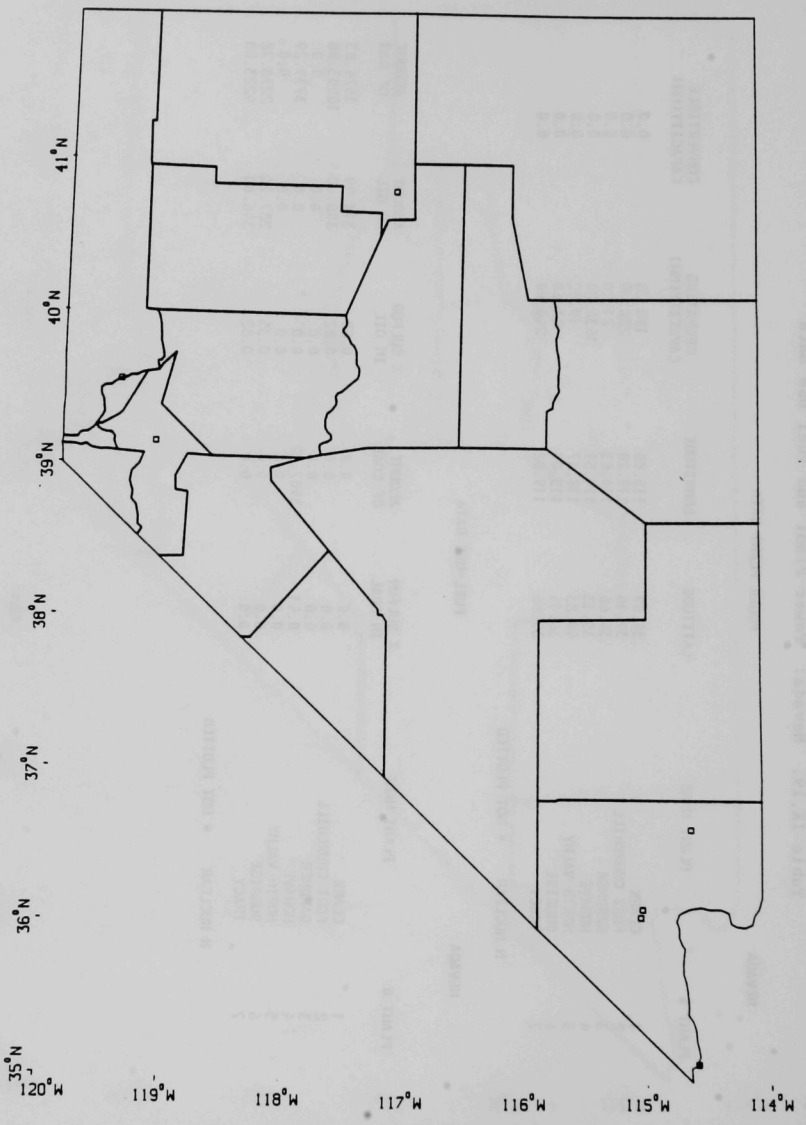


Fig. IX.120. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

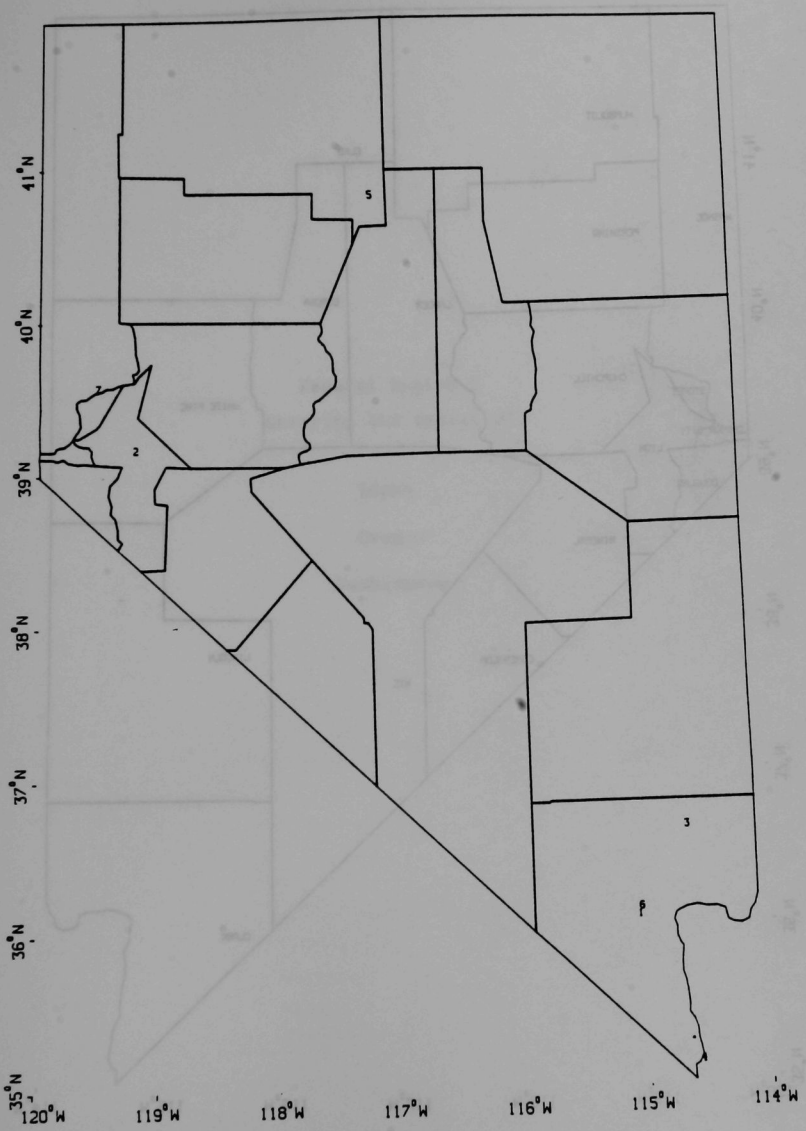


Fig. IX.121. Power Plant Key (See Table IX.19 for Identification and Fuel Use Data)

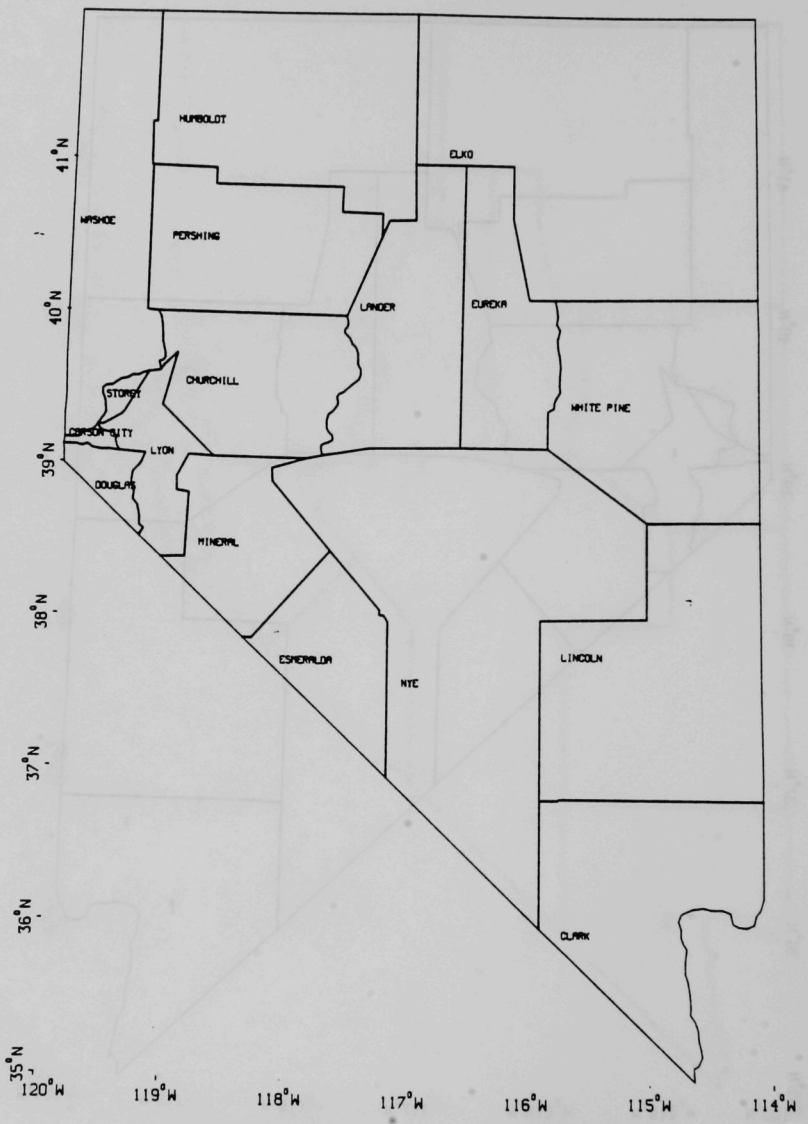


Fig. IX.122. Nevada: Key to Counties

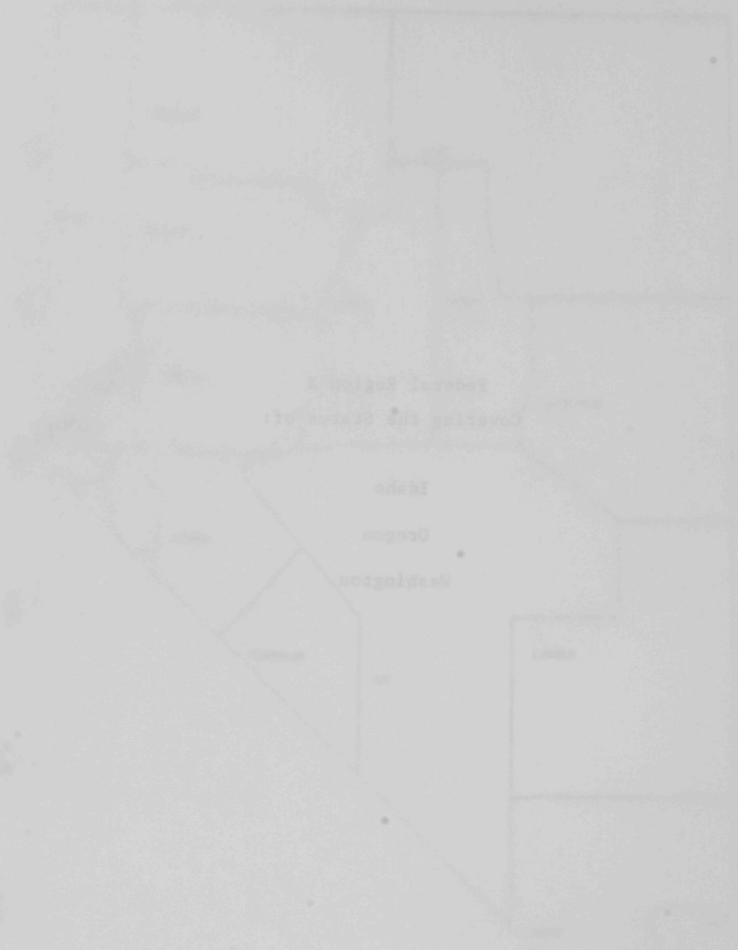
Federal Region X

Covering the States of:

Idaho

Oregon

Washington



REGION X: IDAHO

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	2	0	10	6
	1 yr			5	4
TSP	24 hr	4	0	36	11
	1 yr			17	10
NO_x	1 yr	0[b]	-	0[b]	0
CO	8 hr	1	-	1	1
O_x	1 hr	0[b]	-	0[b]	0

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	0
Nuclear	0
Total	0[b]

IDAHO (Draft SIP, to be reviewed)

I. SOURCES OF THE PROBLEM

Idaho designated two areas as in nonattainment for both primary TSP and SO_2 -- Silver Valley in Shoshone County (around the town of Kellogg and the Bunker Hill lead and zinc smelter complex) and an area around Pocatello. Additional TSP nonattainment areas were designated in Soda Spring (Caribou County) and Lewiston (Nez Perce County). Boise (the state capital) in Ada County was designated as in nonattainment for CO as a result of motor vehicle emissons. Inspection and maintenance legislation was not required for Boise, however, since its population is less than 200,000. There are no NO_x or O_x nonattainment areas in Idaho. Idaho's SIP submittals were delayed, with official receipt by EPA in Jan. 1980.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Shoshone County

a. Bunker Hill has been engaged in lengthy (since 1972) legal action with state and federal EPAs over emission limitations

b. Agreement finally reached June 1979

c. Limits to be met by June 1980

- 625 tons of SO_2 per 7-day period
- restrictions on sulfuric acid plant emissions
- control of fugitive SO_2 emissions

d. EPA expects Bunker Hill to be eligible for a primary nonferrous smelter order

- no plant will be allowed to use a Supplementary Control System

III. NEW SOURCE REVIEW

Idaho will continue to use an emission offset approach to permitting new sources in nonattainment areas. An offset ratio of 1.2:1 will be required. Offsets can be banked for future use and can be sold to other facilities located in the same nonattainment area.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Sulfur-in-fuel limit

a. Coal: 1%

b. Residual oil: 1.75%

B. TSP

1. New sources

a. With heat input $\geq$ 10 MM Btu/hr constructed after 2/1/79

- coal: 0.5 gr/standard dry cubic foot (scfd) of effluent gas
- oil: 0.5 gr/scfd
- gas: 0.15 gr/scfd

2. Existing

a. Those sources constructed before 2/1/79

b. And sources with heat input > 10 MM Btu/hr

- coal: 0.1 gr/scfd
- oil: 0.5 gr/scfd
- gas: 0.15 gr/scfd

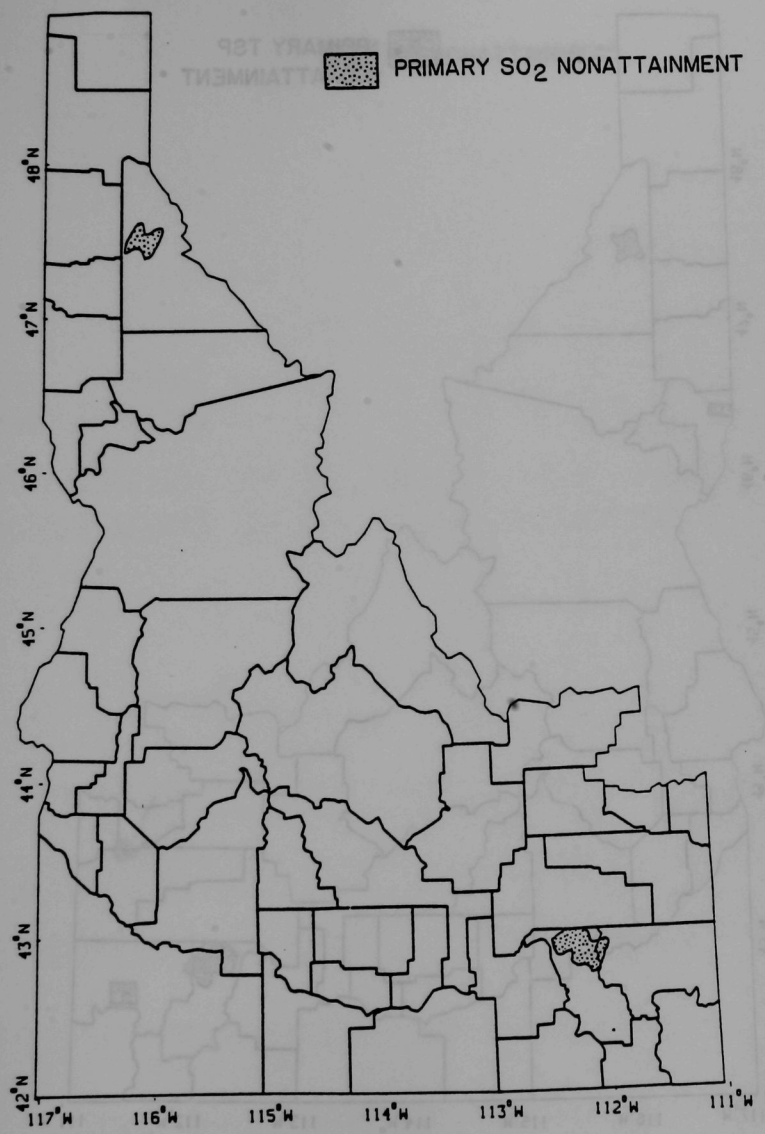


Fig. X.123. Idaho: SO_2 Nonattainment Areas as Designated May 1979

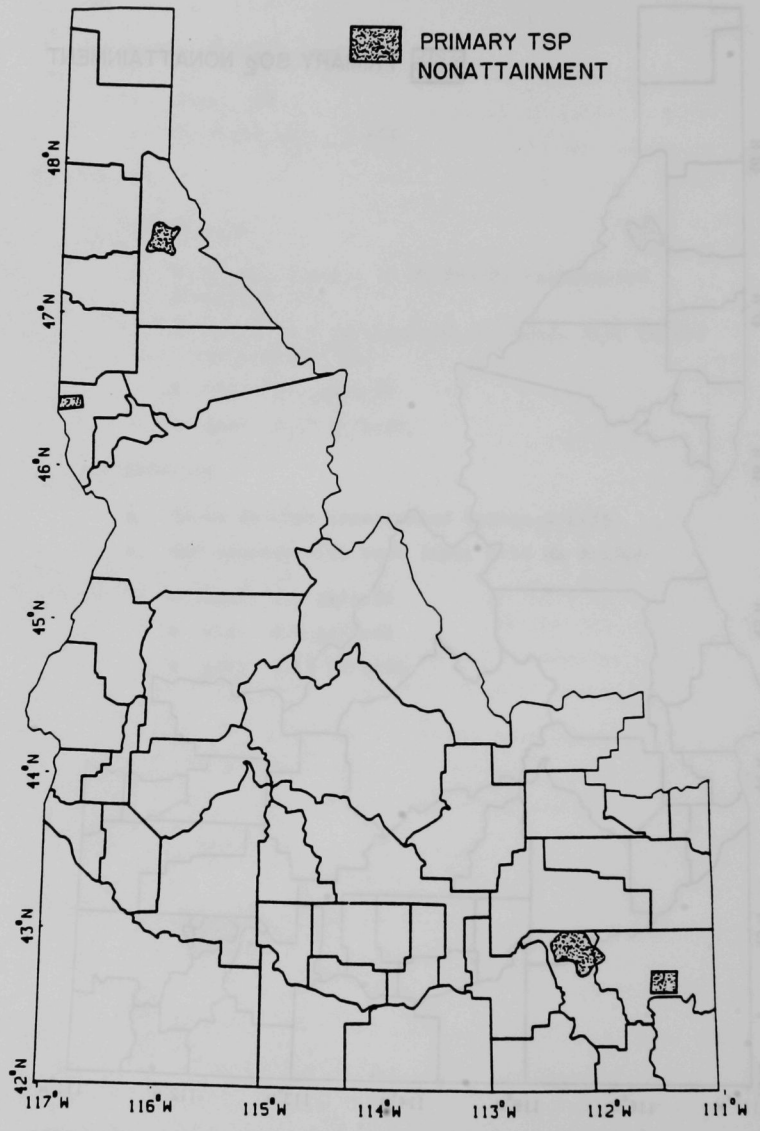


Fig. X.124. Idaho: TSP Nonattainment Areas as Designated May 1979

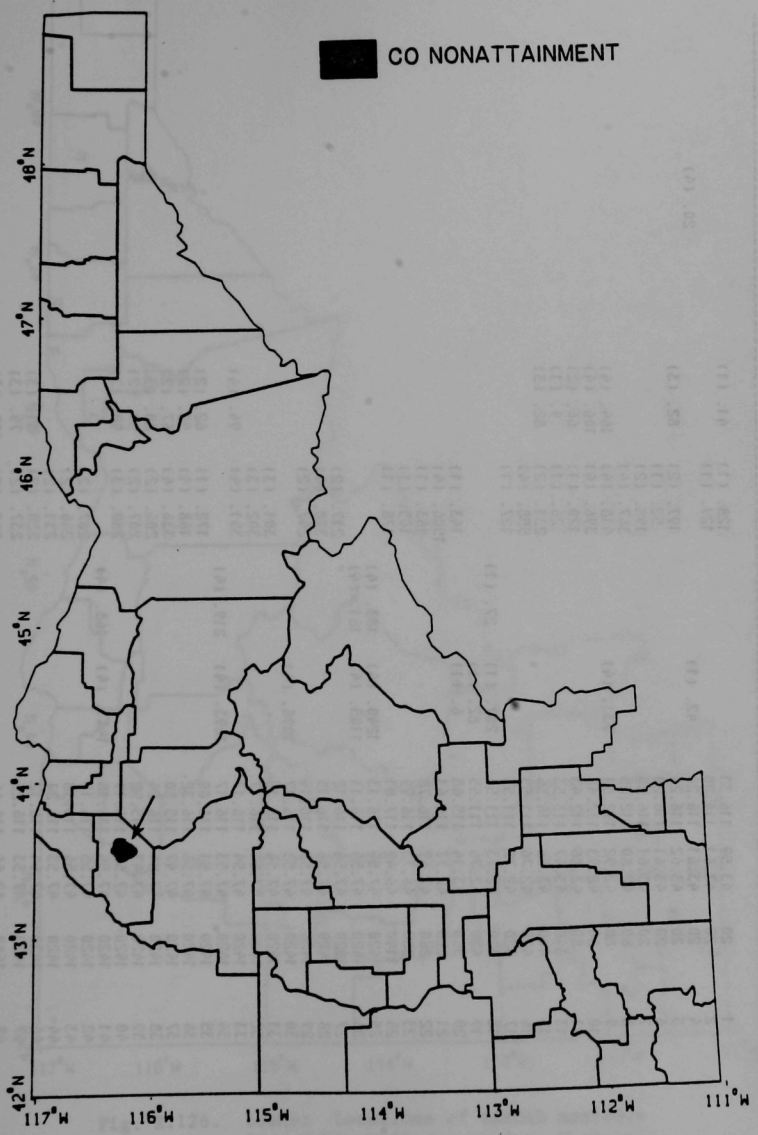


Fig. X.125. Idaho: CO Nonattainment Areas as Designated May 1979

Table X.20. Idaho: SAROAD Monitor Numbers and 1975 Data ($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	20	43.59	116.31			128. (1)	41. (1)			
2	20	43.61	116.20			129. (1)				
4	20	43.61	116.20	42. (1)					20. (4)	
5	20	43.62	116.26			197. (2)	82. (3)			
6	20	43.61	116.20			52. (1)				
7	20	43.61	116.20			198. (2)				
8	80	42.80	112.25			367. (4)				
9	80	42.92	112.51	733. (4)		418. (4)	164. (4)			
10	80	42.93	112.48			396. (4)	106. (4)			
11	80	42.86	112.43			120. (1)	66. (2)			
13	340	43.47	113.53			26. (1)	9. (1)			
15	400	43.58	116.56			231. (2)	82. (3)			
16	420	42.76	111.55			558. (4)				
17	420	42.72	111.53			127. (1)				
18	420	42.73	111.53	207. (1)	27. (1)					
19	420	42.76	111.55	82. (1)						
20	560	43.14	115.68	6. (1)		143. (1)				
21	820	42.77	114.61			1506. (4)				
22	860	47.67	116.78			163. (1)				
23	880	46.73	116.99			105. (1)				
24	1140	46.42	117.01			178. (1)				
25	1420	47.54	116.13	1240. (4)	183. (4)					
26	1420	47.54	116.13	1105. (4)	181. (4)					
27	1420	47.54	116.12			217. (2)				
28	1420	47.54	116.15			370. (4)				
29	1420	47.55	116.14			247. (2)				
30	1420	47.53	116.17	1096. (4)						
31	1420	47.54	116.15			301. (3)				
32	1420	47.54	116.17			302. (3)				
33	1420	47.54	116.17			351. (4)	94. (4)			
34	1420	47.53	116.17	1293. (4)	219. (4)					
35	1420	47.51	116.00			172. (1)	62. (2)			
36	1420	47.56	116.32			168. (1)	58. (2)			
37	1420	47.47	115.80			336. (4)	67. (2)			
38	1420	47.54	116.24			206. (2)	80. (3)			
39	1420	47.47	115.92			207. (2)	59. (2)			
40	1420	47.54	116.19			280. (3)	90. (3)			
41	1420	47.54	116.18	1461. (4)	168. (4)					
42	1420	47.55	116.19			207. (2)				
43	1420	47.54	116.18			246. (2)				
44	1420	47.53	116.21			231. (2)				
46	1420	47.54	116.12			220. (2)	81. (3)			
47	1420	47.53	116.25			237. (2)	79. (3)			
48	1480	42.56	114.46			241. (2)	109. (4)			

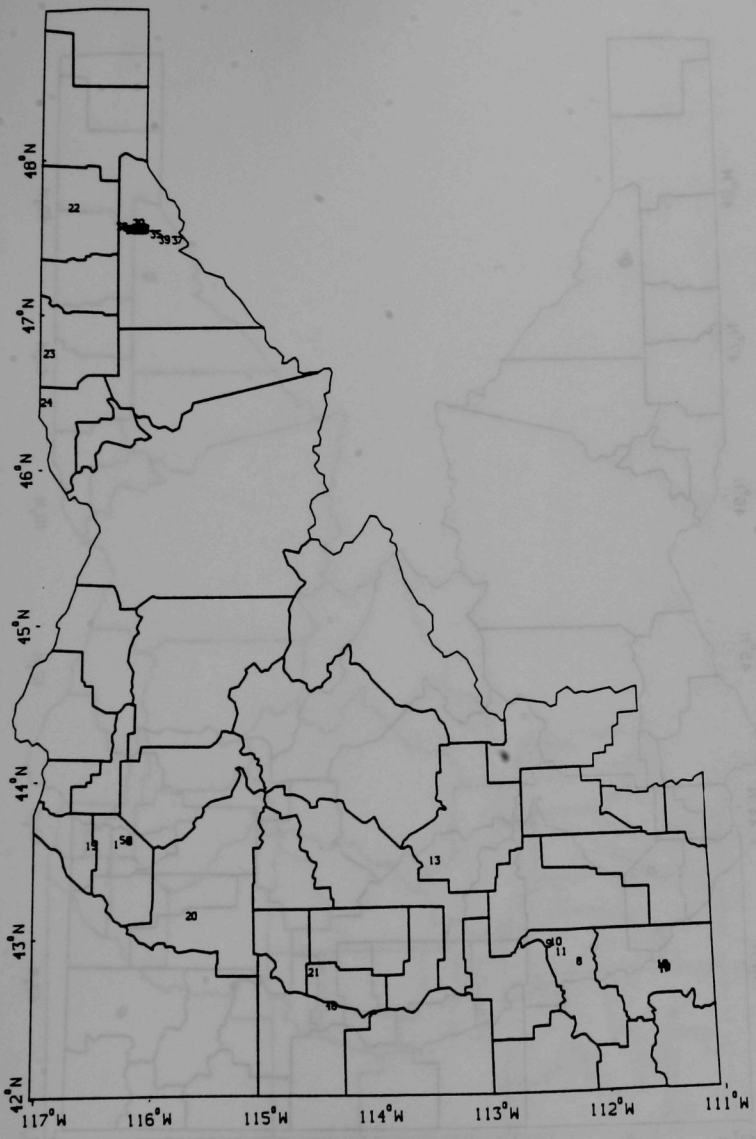


Fig. X.126. Idaho: Locations of SAROAD Monitors
(See Table X.20 for Monitor Numbers)

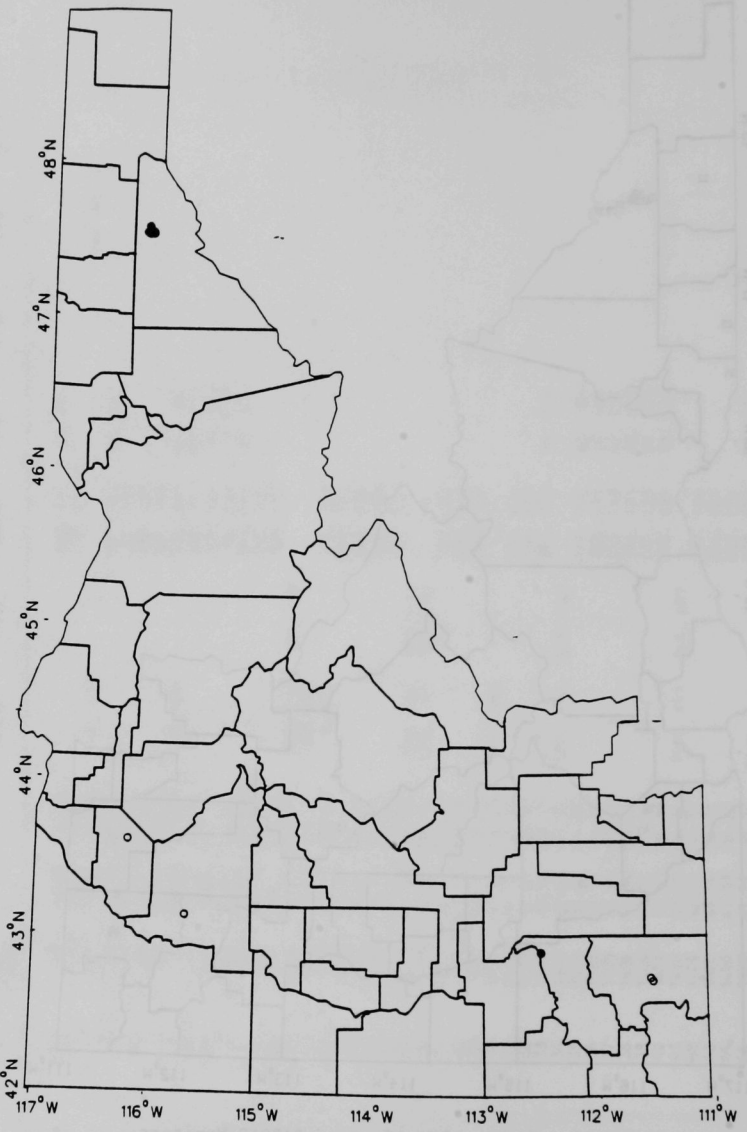


Fig. X.127. Idaho: Monitors Reporting Adequate Data on 24-hr Average SO_2; Violations Shown by Shaded Circles

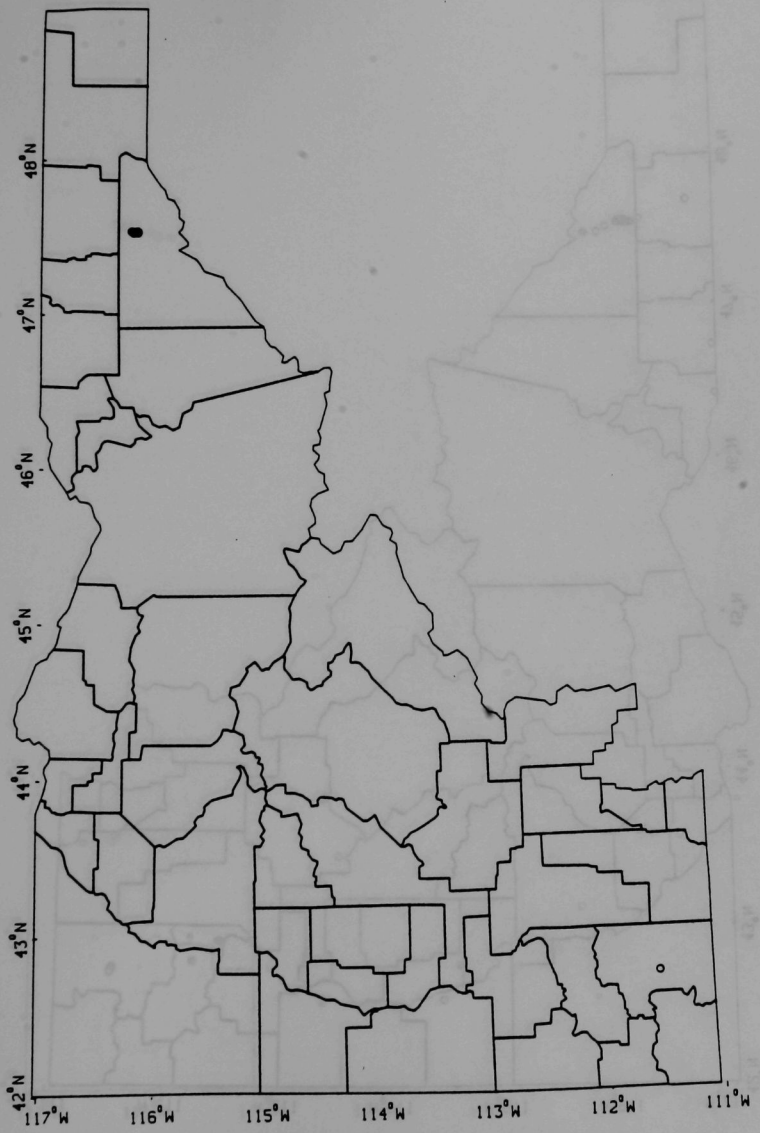


Fig. X.128. Idaho: Monitors Reporting Adequate Data on Annual Average SO_2; Violations Shown by Shaded Circles

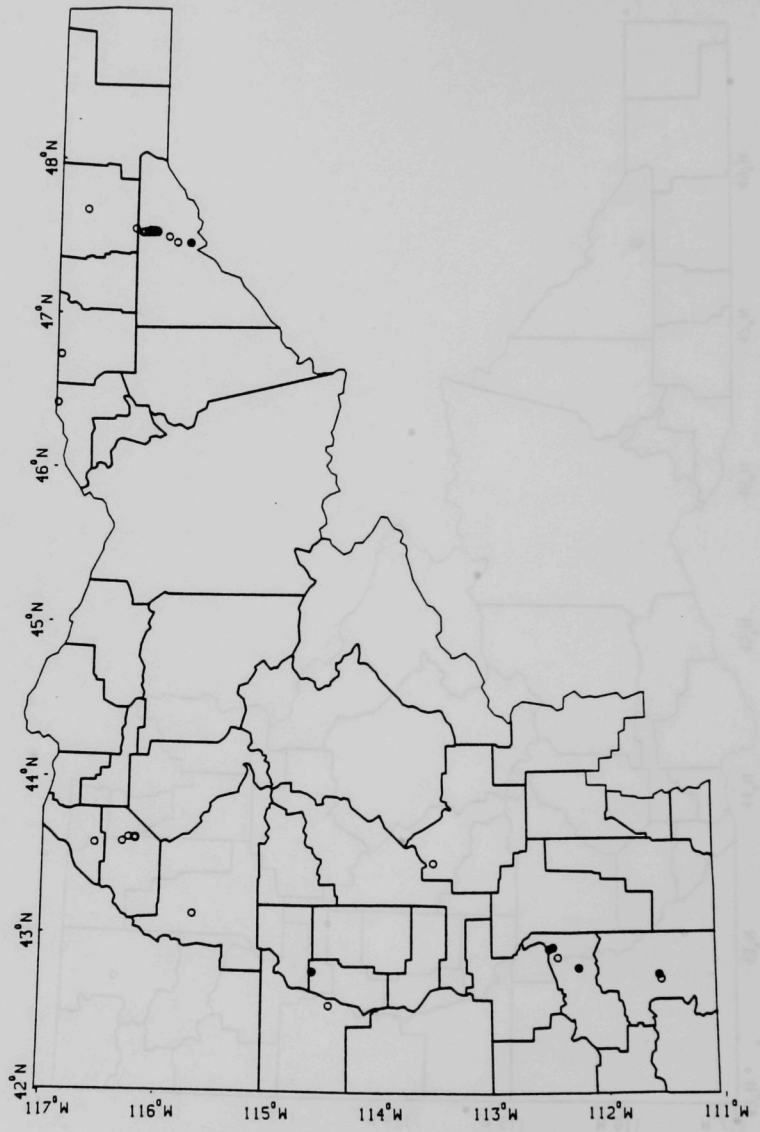


Fig. X.129. Idaho: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

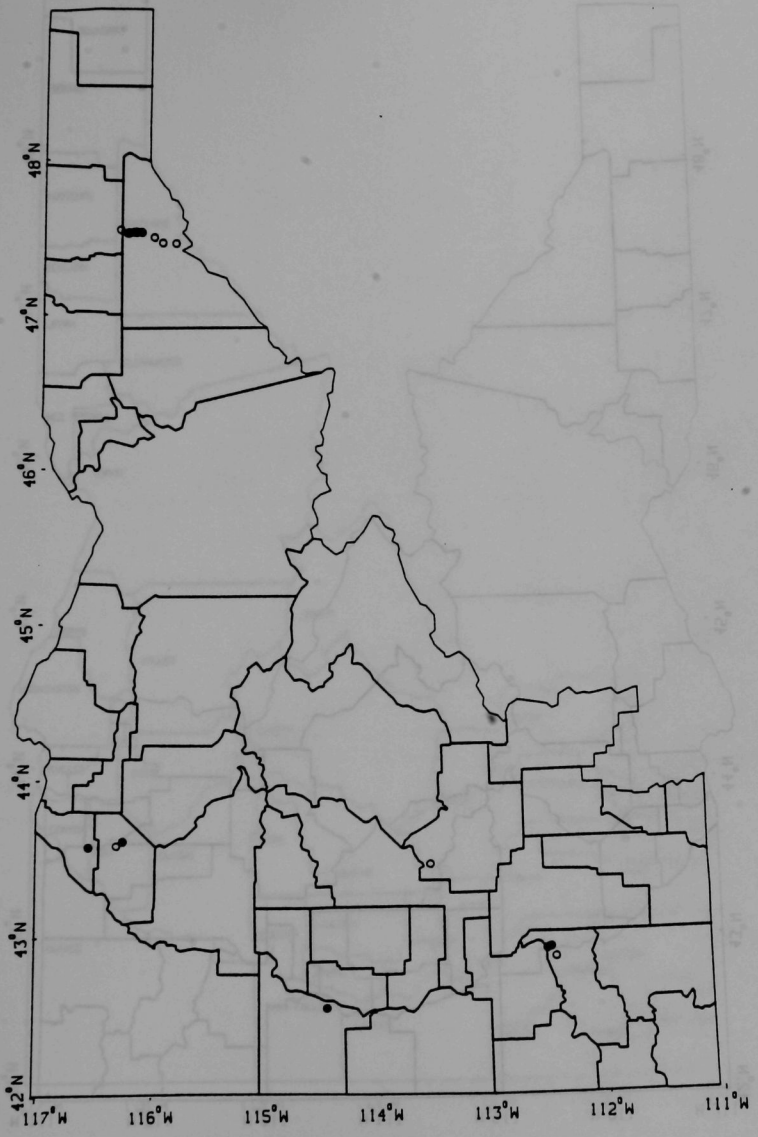


Fig. X.130. Idaho: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

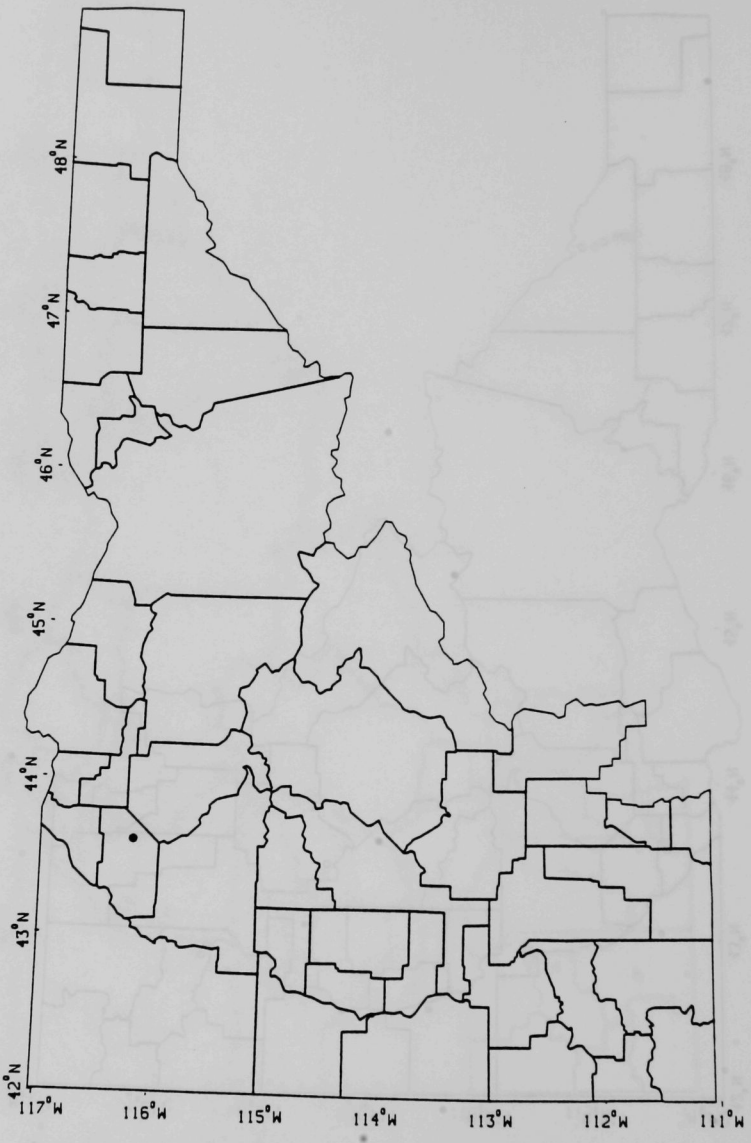


Fig. X.131. Idaho: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

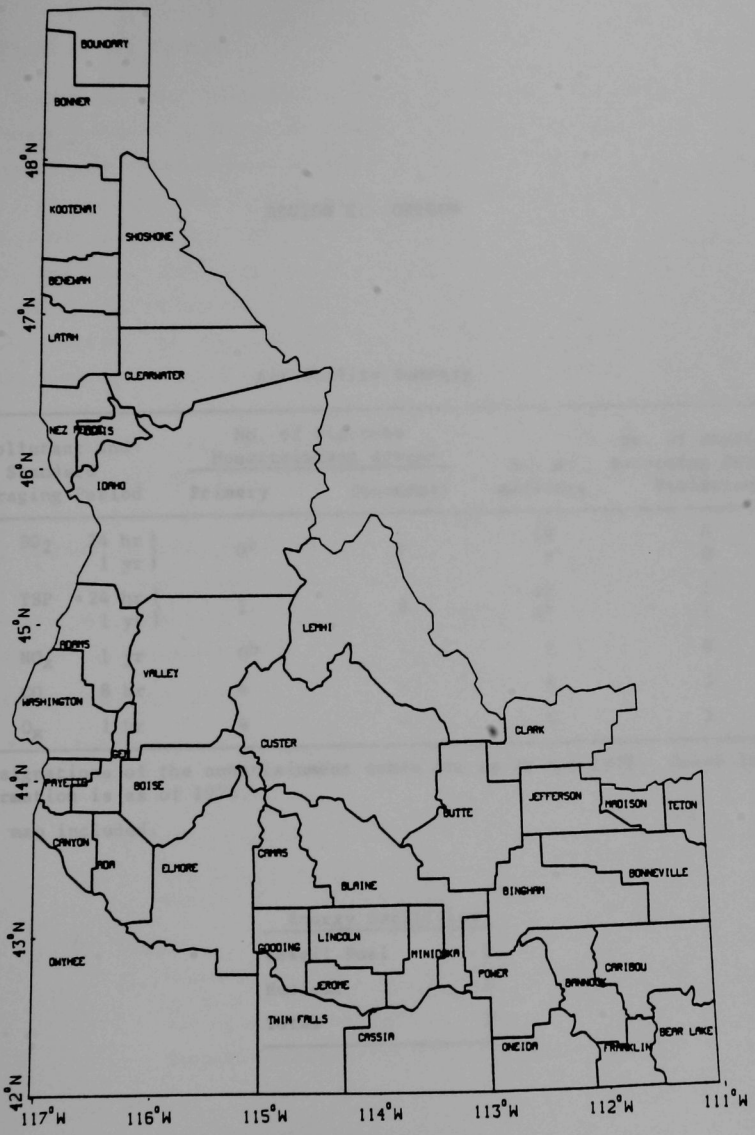


Fig. X.132. Idaho: Key to Counties

REGION X: OREGON

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	0[b]	0	10	0
	1 yr			9	0
TSP	24 hr	1	2	49	1
	1 yr			47	1
NO_x	1 yr	0[b]	-	2	0
CO	8 hr	4	-	6	5
O_x	1 hr	4	-	4	3

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	2
Nuclear	1
Total	3

OREGON (Official SIP, 6/79)

I. SOURCES OF THE PROBLEM

Oregon has four designated nonattainment areas, the Air Quality Maintenance Areas surrounding Portland, Salem, Eugene, and Medford. All four AQMAs are currently in nonattainment of NAAQS for ozone and carbon monoxide. Eugene is in violation of primary TSP standards. Portland and Medford violate secondary TSP standards. The entire state has air quality better than NAAQS for SO_2 and NO_x. Chemical analysis of TSP samples taken in Eugene show that roughly 40% of measured TSP is soil and road dust, 10% is automobile exhaust products, and the remaining 50% is from miscellaneous sources: home heating, burning in residential backyards, slash burning of forest land, and diesel exhausts. Industrial processes and aerosol particulates formed by atmospheric chemical reactions also contribute to TSP levels. Approximately 40% of all measured TSP is transported in by wind from areas outside the AQMA. Mobile source emissions produce from 45% of hydrocarbons in Medford to 90% in Salem. Industrial processes such as surface coating operations, and petroleum product storage and distribution account for the remaining VOC emissions. Mobile sources, primarily automobiles, are responsible for over 95% of the CO in Oregon's nonattainment AQMAs.

II. ATTAINMENT STRATEGIES

A. TSP

1. Portland

a. Study and evaluate fugitive dust control measures

b. Request 18-month extension of deadline for submitting plan for secondary nonattainment areas

2. Eugene

a. Request redesignation to secondary rather than primary status, on the basis of improper monitor siting and substandard monitors

b. Request 18-month extension for plan submittal

3. Medford

a. Request redesignation to primary rather than secondary status, due to worsened air quality

b. Reasonably Available Control Technology (RACT) to be installed for:

- veneer dryers
- particle board dryers
- charcoal plants
- wood waste boilers

c. Emissions offsets required from new sources

B. Ozone

1. Portland - requires extension to 1987 to attain standard

a. Federal Motor Vehicle Emissions Control Program

b. Inspection and maintenance of vehicles

c. RACT on stationary VOC sources

d. Additional public transit improvements

e. Expanded carpooling

f. Parking restrictions (downtown) and park-and-ride lots

g. Traffic flow improvements

2. Salem - to meet standard by December 31, 1982

a. FMVECP

b. VOC rules for 11 source categories

c. Setting plant-specific emission limits for existing sources consistent with attainment strategy data base

3. Eugene

a. FMVECP

b. Inspection and maintenance of vehicles

c. RACT for stationary VOC emitters

d. Improved public transit

e. Carpooling

f. Parking controls

g. Traffic flow improvements

4. Medford

a. FMVECP

b. VOC rules for 11 source categories

c. Emissions limits consistent with the attainment strategy data base

C. CO

1. FMVECP and inspection and maintenance

2. Transportation control measures for ozone attainment

III. NEW SOURCE REVIEW

Oregon will be using both the emissions offset policy and a growth allowance. Offsets will be required whenever there is no growth allowance available. All major sources of TSP will be required to offset their additional emissions by reductions from existing sources. In Medford, sources of TSP as small as five tons per year will need offsets. A growth allowance will be available for VOC sources in Salem, Medford, and Eugene but not in Portland.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. Limit on sulfur in fuel

a. After 6/72, coal may not exceed 1% sulfur, by weight

b. Residual fuel oil, 1.75% sulfur

2. Emission limitations for new sources

a. Where $150 < Q < 250$ MM Btu/hr: 1.6 lb SO_2/ MM Btu, for solid fuel, where Q is heat input

b. With heat input > 250 MM Btu/hr: NSPS

B. TSP

1. Existing sources: 0.2 grains/scf

2. New sources: 0.1 grains/scf

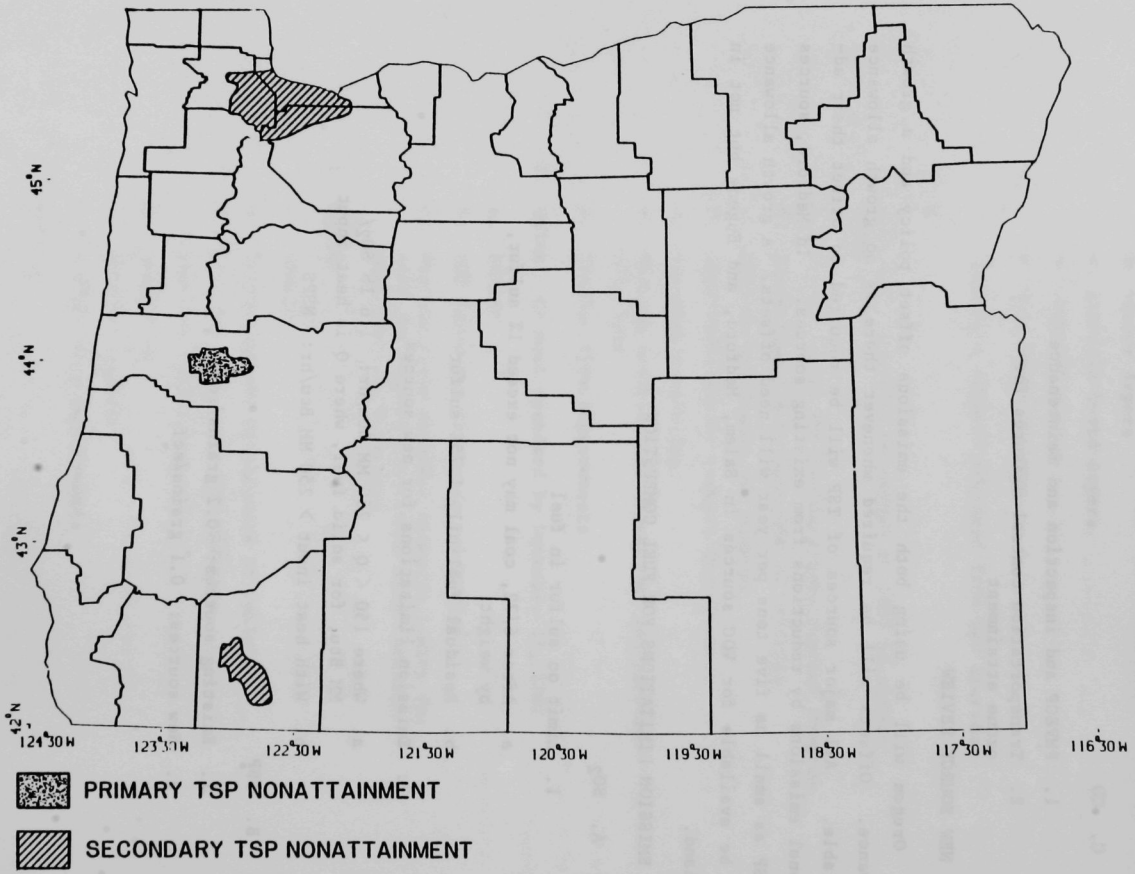


Fig. X.133. Oregon: TSP Nonattainment Areas as Designated May 1979

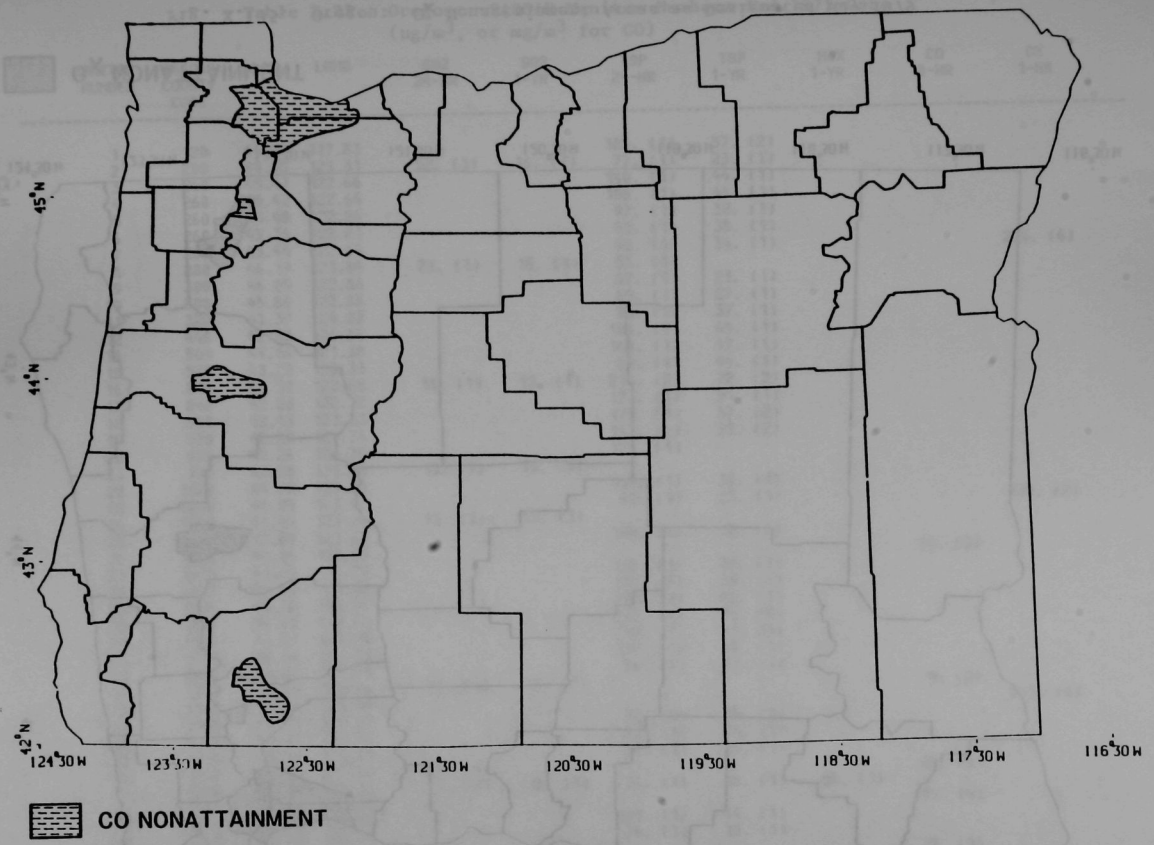


Fig. X.134. Oregon: CO Nonattainment Areas as Designated May 1979

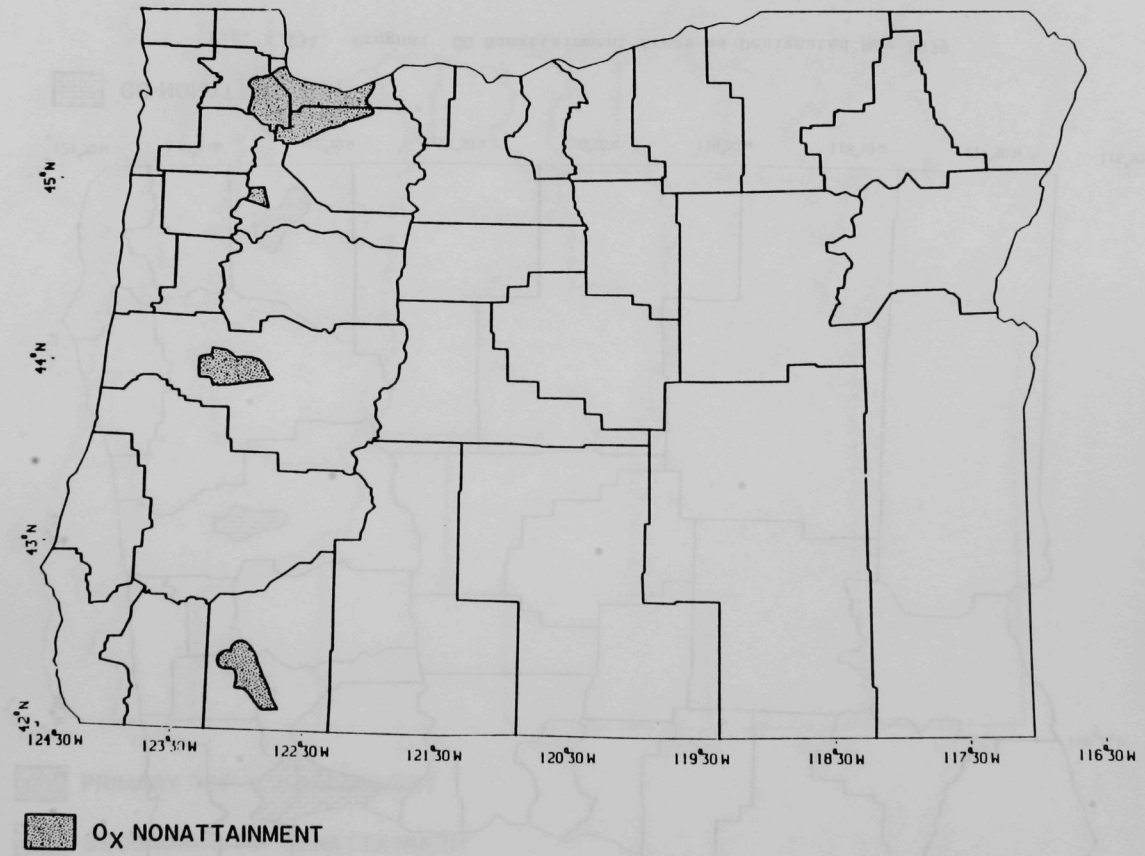


Fig. X.135. Oregon: O_x Nonattainment Areas as Designated May 1979

Table X.21. Oregon: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	120	44.77	117.83			105. (1)	57. (2)			
2	200	44.53	123.31	52. (1)	16. (1)	77. (1)	23. (1)			
3	260	45.41	122.66			140. (1)	44. (1)			
4	260	45.42	122.64			106. (1)	40. (1)			
5	260	45.40	122.26			97. (1)	32. (1)			
6	260	45.36	122.61			92. (1)	38. (1)			294. (4)
7	260	45.44	122.64			90. (1)	34. (1)			
8	280	46.19	123.84	23. (1)	15. (1)	55. (1)				
9	300	46.05	122.83			67. (1)	21. (1)			
10	300	45.86	122.80			65. (1)	27. (1)			
11	320	43.37	124.22			93. (1)	37. (1)			
12	440	42.83	124.50			104. (1)	44. (1)			
14	500	44.06	121.30			164. (1)	47. (1)			
15	520	43.22	123.33			89. (1)	44. (1)			
16	840	42.32	122.88	18. (1)	13. (1)	214. (2)	72. (2)			
17	840	42.20	122.72			123. (1)	51. (1)			
18	880	42.43	123.33			173. (1)	57. (2)			
19	920	42.20	121.74			147. (1)	59. (2)			
20	920	42.26	121.74			120. (1)				
21	920	42.20	121.74	13. (1)	13. (1)					
22	1020	44.22	123.20			138. (1)	35. (1)			139. (2)
23	1020	44.01	123.08			92. (1)	23. (1)			
24	1020	44.04	123.09	13. (1)	13. (1)					
25	1020	43.80	123.06			100. (1)	38. (1)			
26	1020	44.04	123.09						11. (3)	
27	1020	44.11	123.21			158. (1)	30. (1)			
28	1020	44.05	123.09			132. (1)	55. (1)			
29	1020	43.74	122.46			122. (1)	46. (1)			
30	1020	44.05	123.02			210. (2)	70. (2)			
31	1020	44.04	123.00			252. (2)	91. (3)			
32	1080	44.54	122.91			127. (1)	40. (1)			
33	1080	44.64	123.11			86. (1)	31. (1)			
34	1140	44.95	123.04	18. (1)	15. (1)				9. (2)	
35	1140	44.88	123.00							245. (4)
36	1140	44.93	123.01			78. (1)	35. (1)			
37	1140	45.15	122.82			80. (1)	20. (1)			
39	1240	45.55	122.39			87. (1)	25. (1)			
40	1240	45.52	122.68	121. (1)					22. (4)	
41	1240	45.51	122.68	53. (1)	18. (1)	76. (1)	38. (1)	58. (1)		
43	1240	45.52	122.67						14. (4)	
44	1240	45.52	122.54			105. (1)	44. (1)			
45	1240	45.52	122.73			74. (1)	15. (1)			
46	1240	45.54	122.62						19. (4)	
47	1240	45.56	122.74	224. (1)	27. (1)					

Table X.21. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
48	1240	45.52	122.67						13. (4)	
49	1240	45.62	122.78			128. (1)	43. (1)			
50	1240	45.60	122.79			117. (1)	42. (1)			
52	1240	45.55	122.71			147. (1)	53. (2)			
53	1240	45.52	122.67			127. (1)	58. (2)			
54	1240	45.49	122.64			134. (1)	60. (2)			
55	1240	45.59	122.74			87. (1)	37. (1)			
56	1240	45.52	122.68					50. (1)		176. (3)
57	1440	44.92	123.31			78. (1)	31. (1)			
58	1780	45.67	118.79	14. (1)	13. (1)	163. (1)	68. (2)			
59	1780	49.17	118.93			176. (1)	30. (1)			
60	1800	45.32	118.09			102. (1)	34. (1)			
61	1840	45.60	121.18			141. (1)	40. (1)			
62	1860	45.53	122.95			319. (3)	34. (1)			
63	1860	45.49	122.80			109. (1)	34. (1)			
64	1940	45.21	123.19			67. (1)	24. (1)			

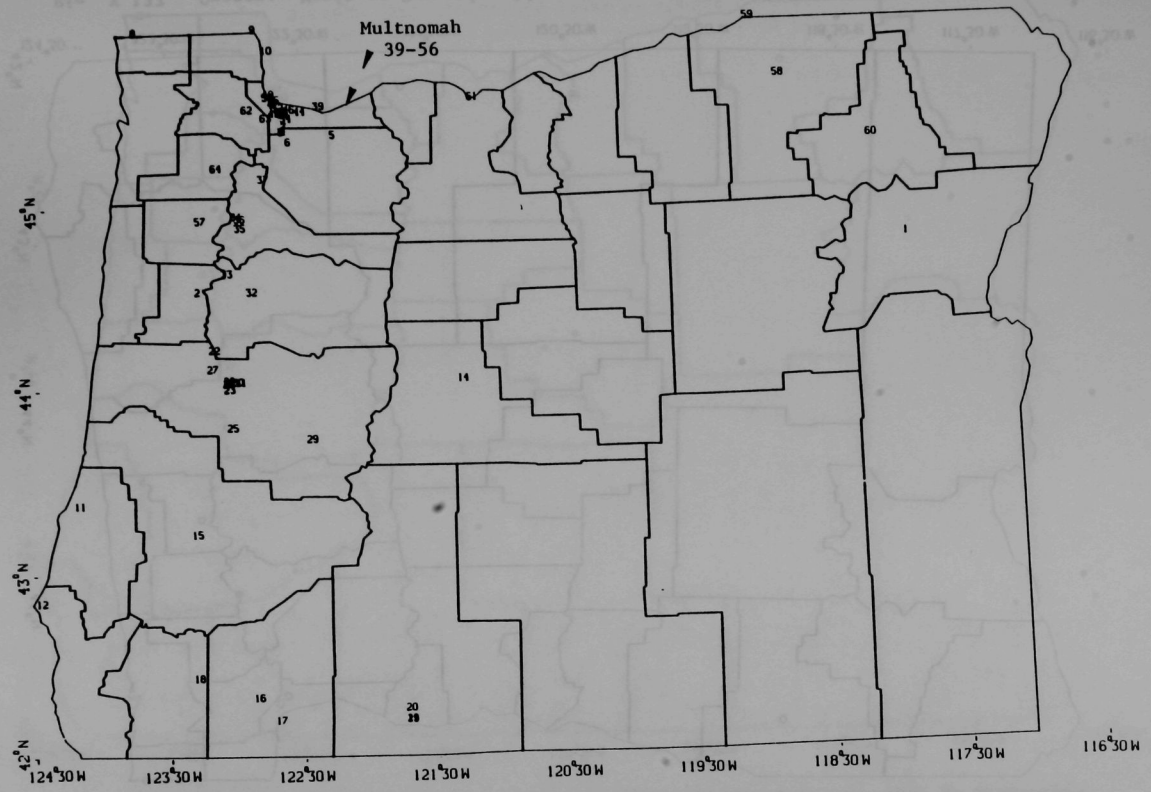


Fig. X.136. Oregon: Locations of SAROAD Monitors
(See Table X.21 for Monitor Numbers)

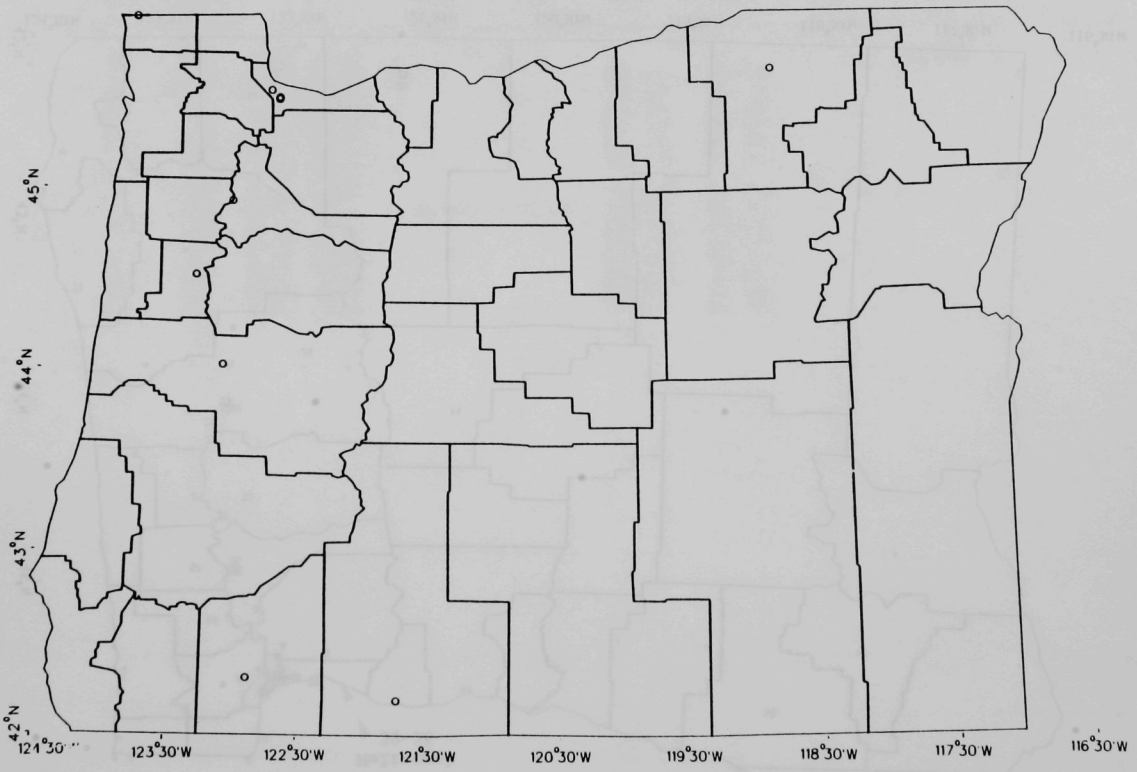


Fig. X.137. Oregon: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

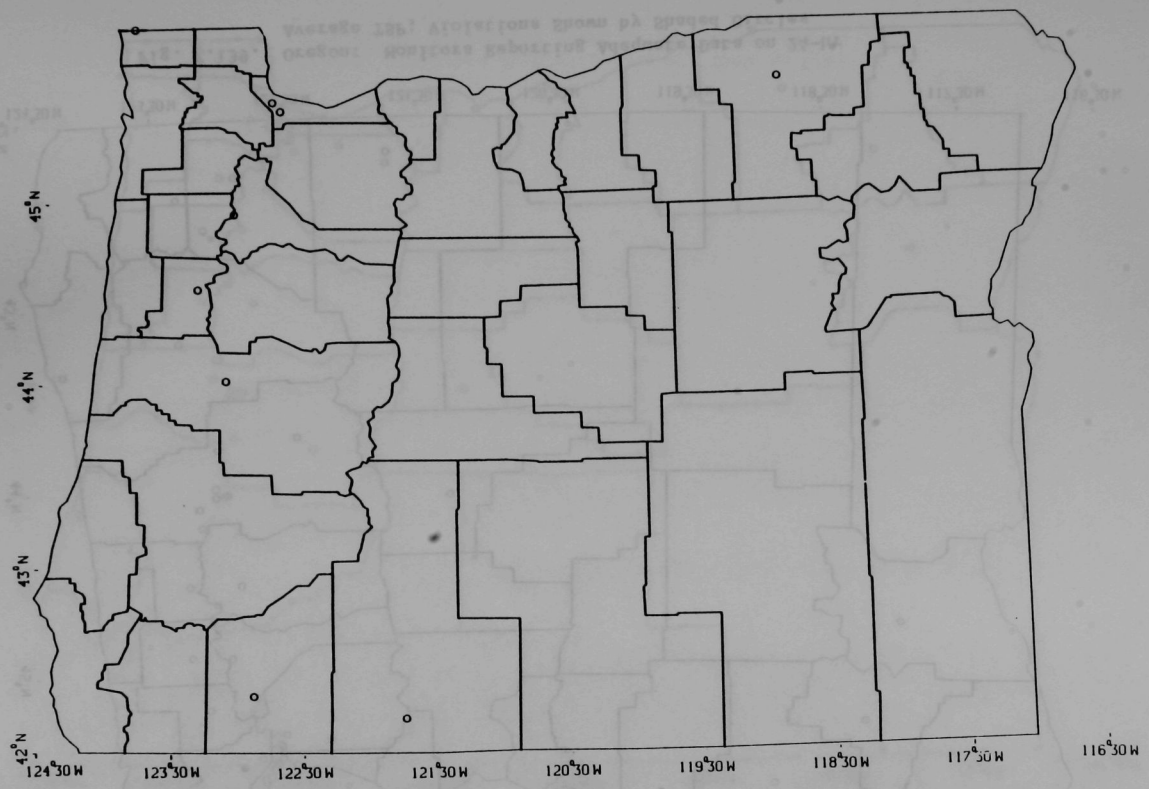


Fig. X.138. Oregon: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

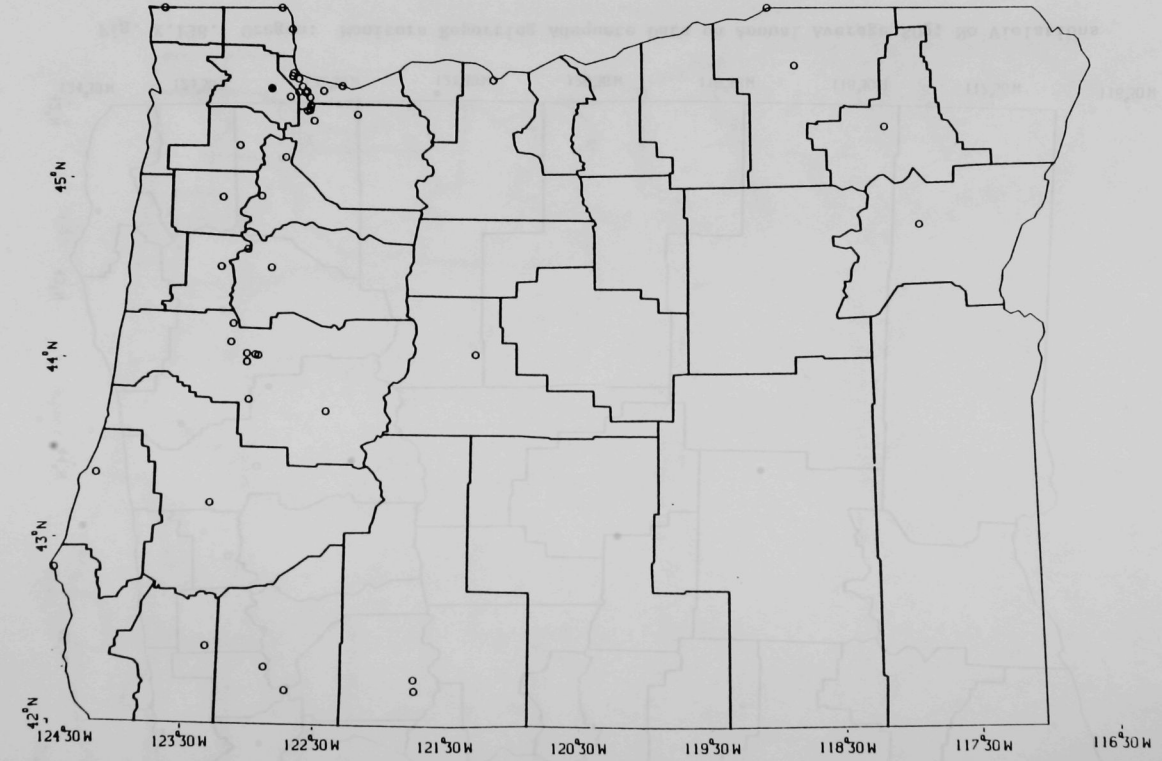


Fig. X.139. Oregon: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

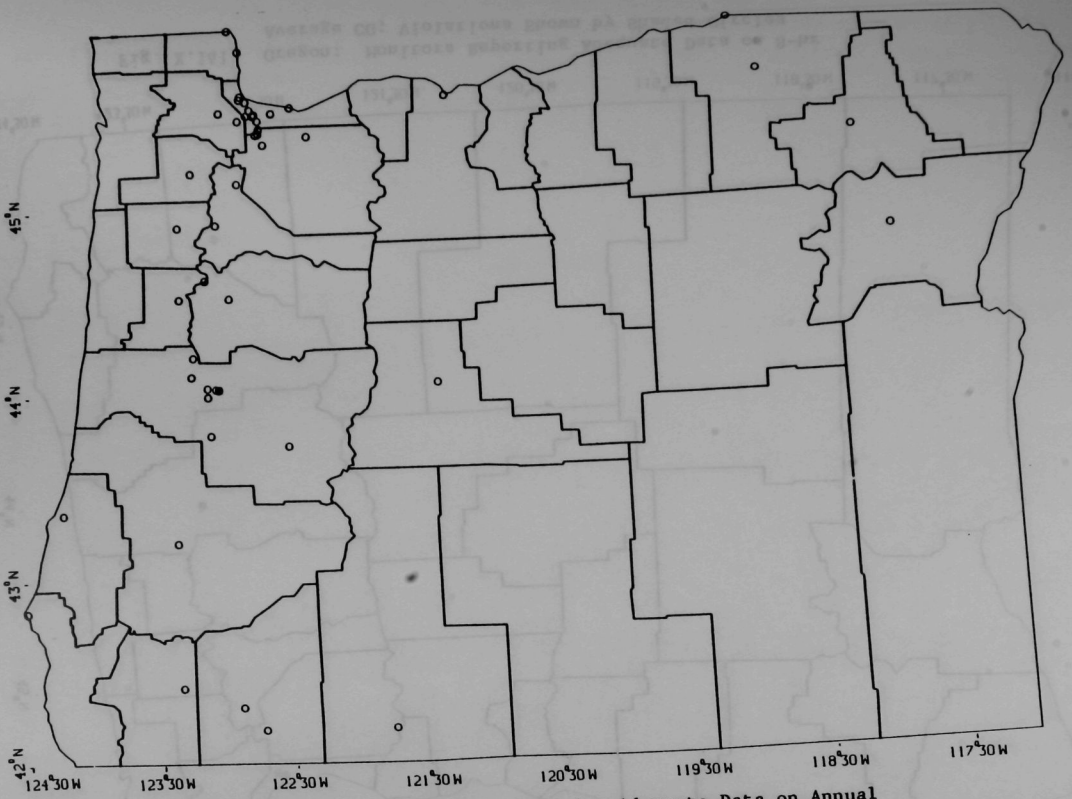


Fig. X.140. Oregon: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

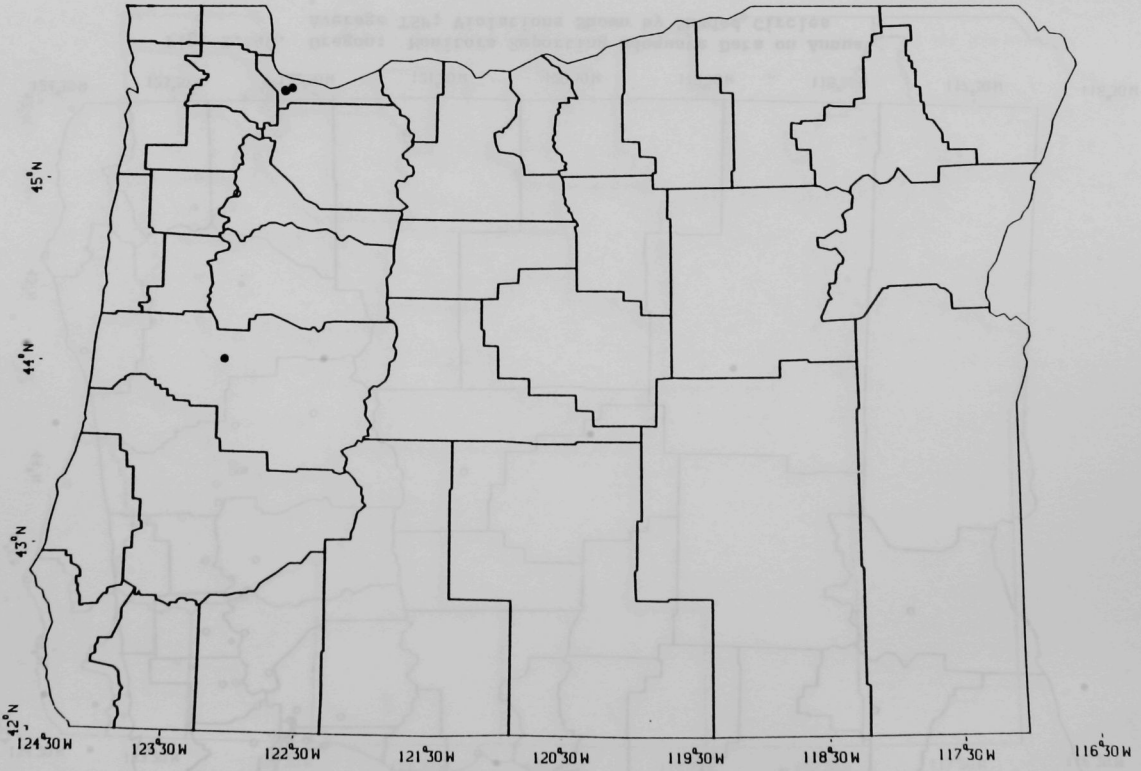


Fig. X.141. Oregon: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

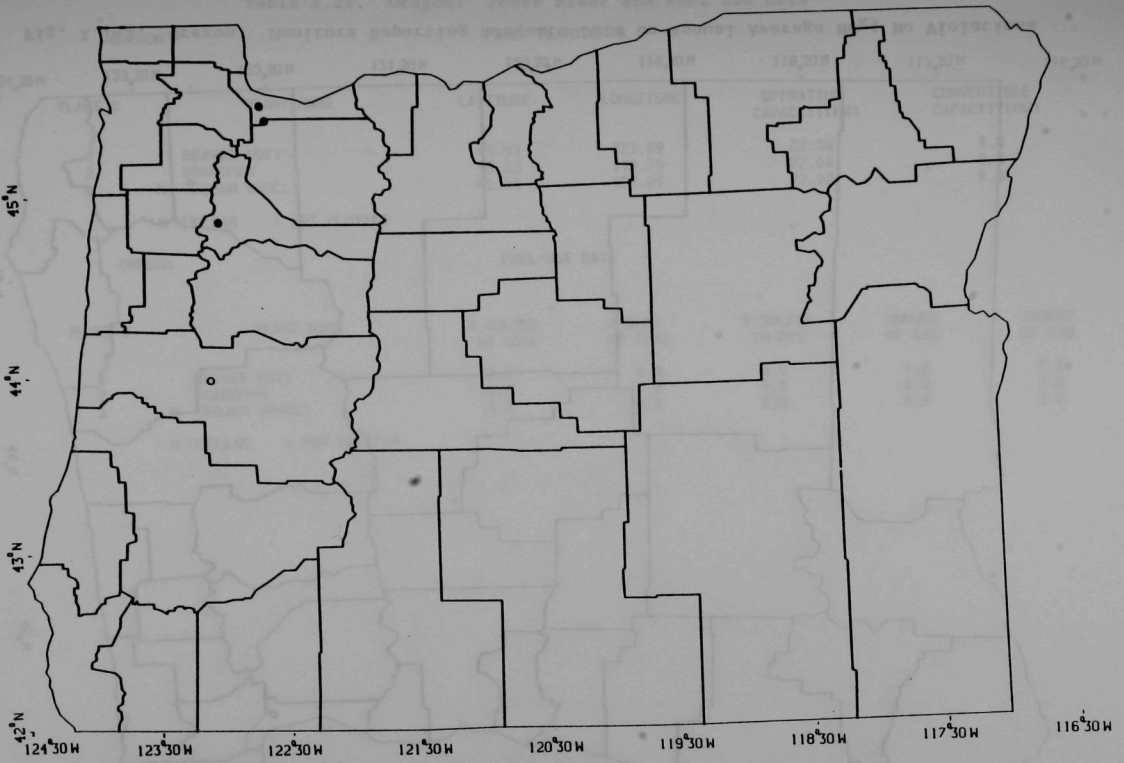


Fig. X.142. Oregon: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

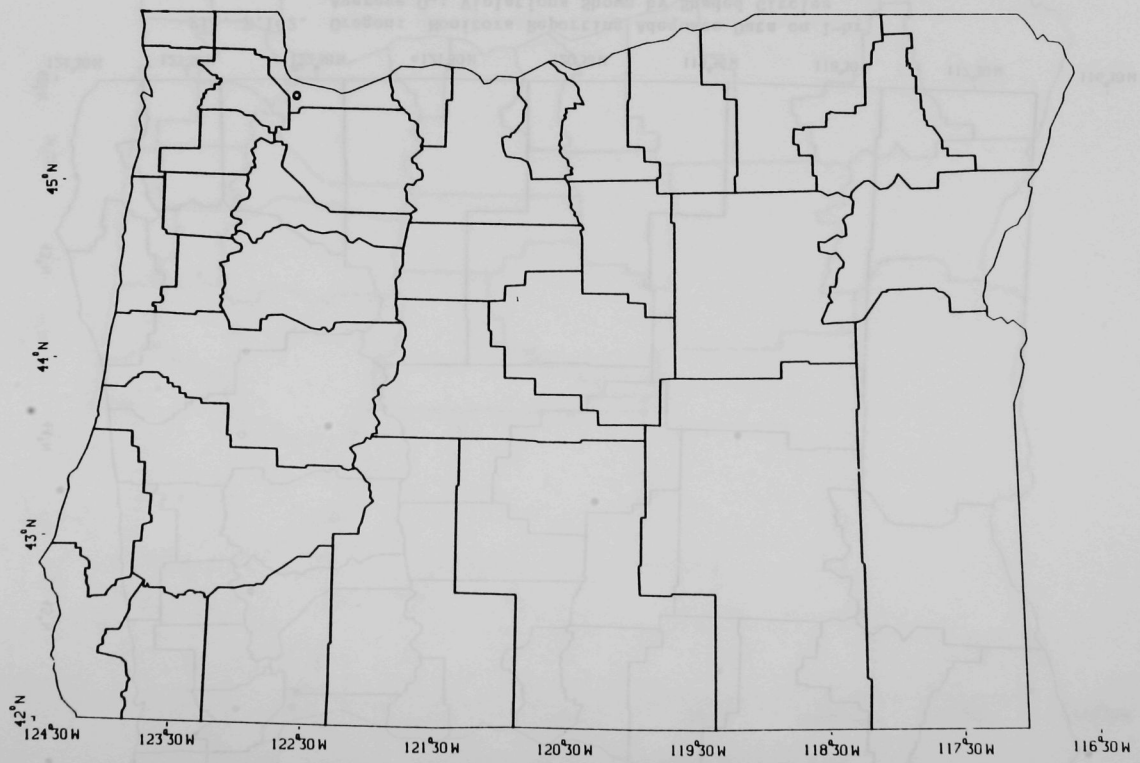


Fig. X.142. Oregon: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table X.22. Oregon: Power Plant and Fuel Use Data

OREGON — POWER PLANT DATA

PLANT #		PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1		BEAVER (GT)	45.93	123.09	22.00	0.0
2		BOARDMAN	45.83	119.75	22.00	0.0
3	N	TROJAN (NUCL)	45.93	123.09	22.00	0.0

N NUCLEAR * NOT PLOTTED

OREGON — FUEL-USE DATA

PLANT #		PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1		BEAVER (GT)	0.0	0.0	0.0	0.0	0.0
2		BOARDMAN	0.0	0.0	0.0	0.0	0.0
3	N	TROJAN (NUCL)	0.0	0.0	0.0	0.0	0.0

N NUCLEAR * NOT PLOTTED

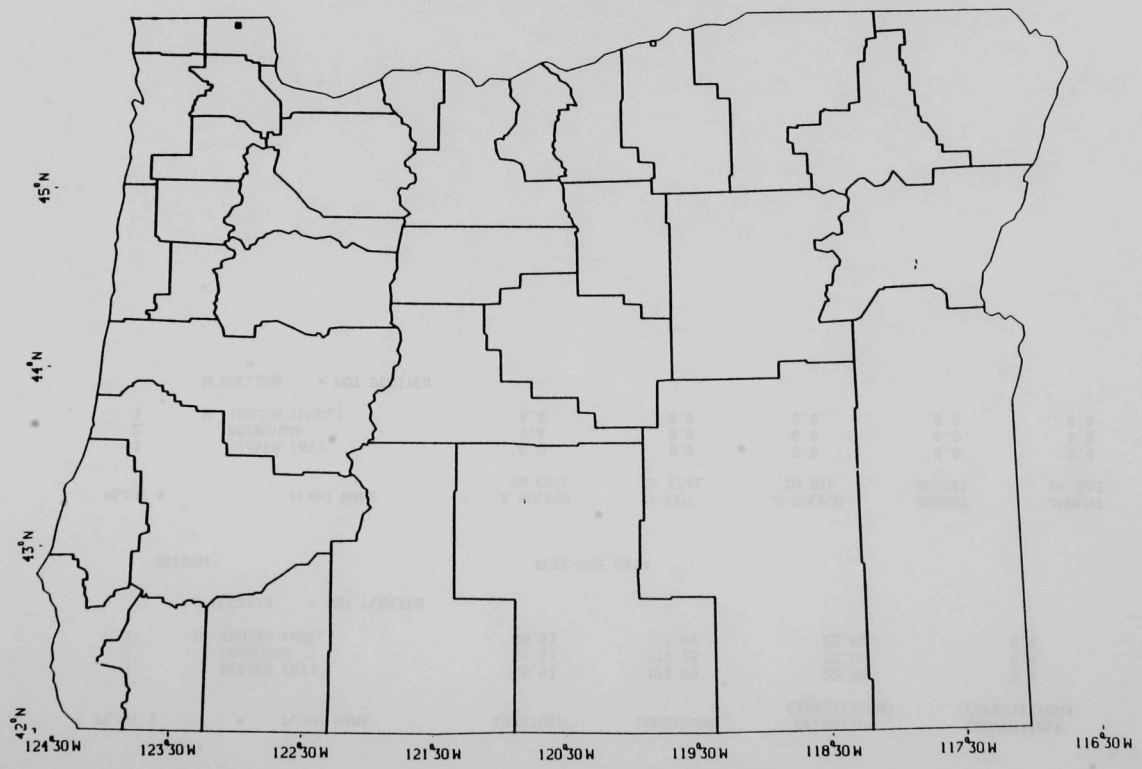


Fig. X.143. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

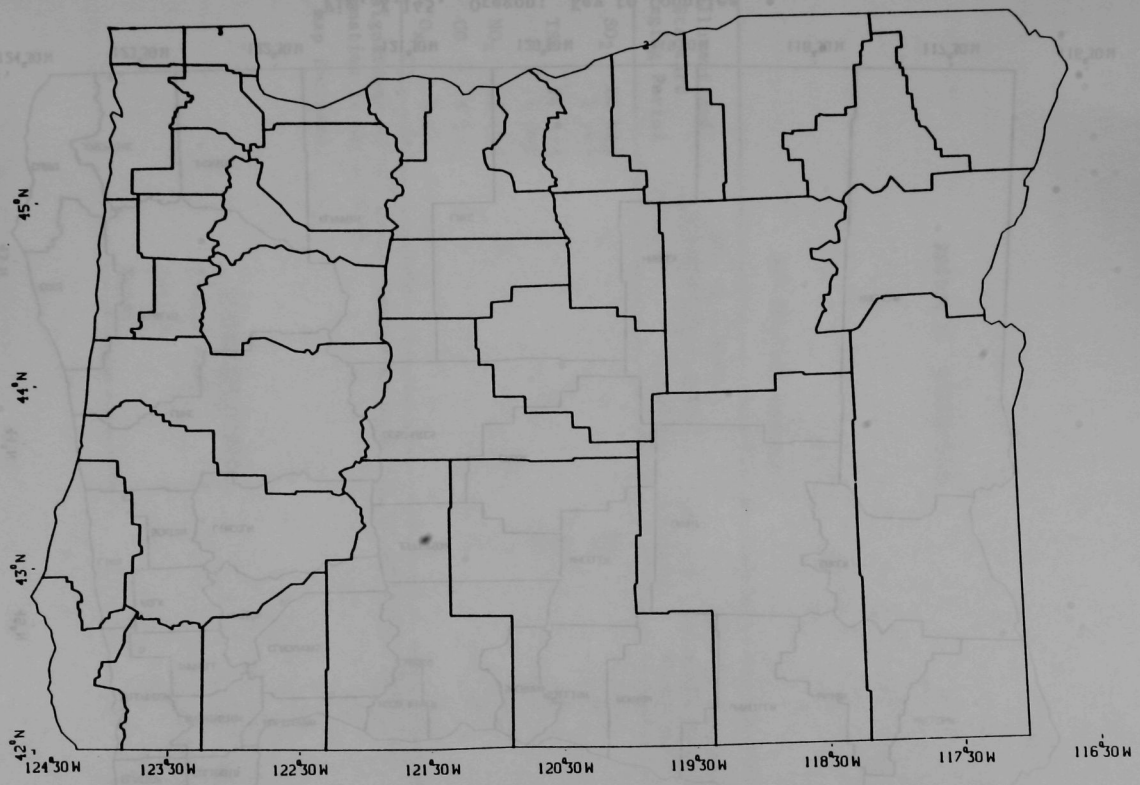


Fig. X.144. Power Plant Key (See Table X.22 for Identification and Fuel Use Data)

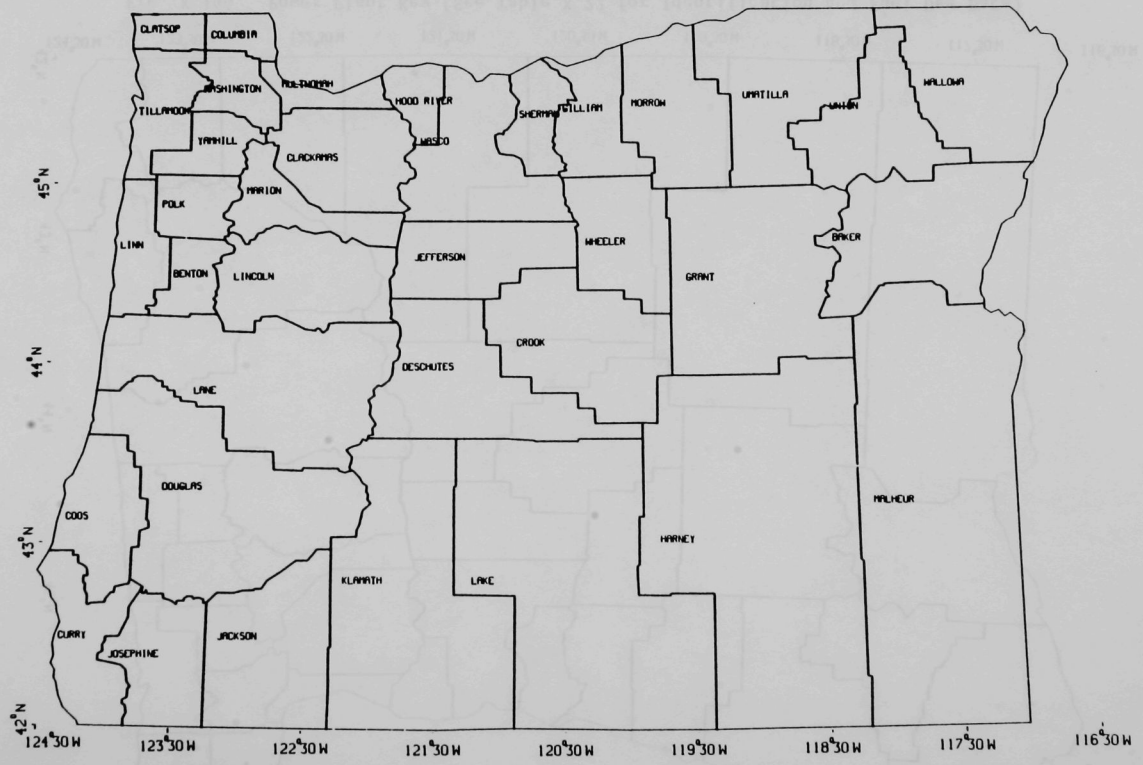


Fig. X.145. Oregon: Key to Counties

REGION X: WASHINGTON

Air Quality Summary

Pollutant and Standard Averaging Period		No. of Discrete Nonattainment Areas[a]		No. of Monitors	No. of Monitors Recording Primary Violations
		Primary	Secondary		
SO_2	24 hr	1	0	27	0
	1 yr			12	0
TSP	24 hr	8	3	68	8
	1 yr			59	5
NO_x	1 yr	0[b]	-	3	0
CO	8 hr	3	-	10	8
O_x	1 hr	2	-	7	5

[a]Designations of the nonattainment areas are as of May 1979. Other information is as of 1975.

[b]No map included.

Energy Facilities	
Fossil Fuel	1
Nuclear	6
Total	7

WASHINGTON (Official SIP, 4/79)

I. SOURCES OF THE PROBLEM

Washington designated one area as in nonattainment for SO_2 -- Tacoma, in Pierce County. A copper smelter, owned by the American Smelting and Refining Co. (ASARCO) is the primary source of SO_2 emissions. The state designated eight areas as in nonattainment for the primary TSP standards. Seattle and the nearby towns of Renton and Kent (King County) have both primary and secondary standard violations, as a result of nontraditional urban dust. Similarly, the cities of Tacoma (Pierce Co.), Yakima (Yakima Co.), Walla Walla (Walla Walla Co.) Spokane (Spokane Co.) and the Tri-City area of Paso, Kennewick, and Richland (Benton and Franklin Cos.) record primary violations as a result of urban fugitive dust from nontraditional sources. A primary nonattainment area in Vancouver (Clark Co.) is the result of fugitive process emissions from the Carborundum Corp. silicon carbide plant. Violations in Clarkston (Asotin Co.) are judged to be the result of rural fugitive dust and emissions from the neighboring town of Lewiston in Idaho. Secondary violations were recorded in Longview (Cowlitz Co.) as the result of emissions from several point sources -- a sawmill, a kraft paper plant, a fiber mill, with additional particulate emissions attributed to resuspended road dust. A secondary TSP nonattainment area was designated in Port Angeles (Clallam Co.) as a result of a log yard and a lumber yard.

Transportation systems in Washington are primarily automobile based. Mobile sources account for virtually all the CO in the nonattainment areas of Spokane, Yakima, and the Seattle-Tacoma urban area. Mobile sources also account for 50% of hydrocarbon emissions in the metropolitan Seattle O_x nonattainment area, and 66% of the hydrocarbon emissions in Clark County (Vancouver O_x nonattainment area). Stationary sources of VOC such as petroleum refining, storage, and transshipment facilities account for the remainder of the emissions.

II. ATTAINMENT STRATEGIES

A. SO_2

1. Violations were caused by ASARCO plant
2. No violations since Dec. 1976 when ASARCO improved its Supplementary Coal System

3. Redesignation to attainment requested
4. Continued attainment to be achieved

   a. ASARCO is to remove 45% of SO_2
   b. ASARCO is to continue to curtail processes during air stagnation periods

B. TSP

1. Seattle-Tacoma

   a. RACT already required for existing point sources

      - to be reassessed on a case-by-case basis
      - possible upgrading to BACT, NSPS, or LAER levels

   b. RACT to be applied to fugitive industrial emissions backed up by a Visible Emissions Standard regulation

   c. Controlling road dust

      - selective road paving and oiling
      - selective street cleaning

   d. Controls on construction activity
   e. Control of slash burning in forests (state responsibility)

2. Spokane

   a. Bringing one point source into compliance with existing SIP
   b. RACT for industrial fugitive emissions
   c. Paving 35 miles of roads and 300 parking lots
   d. Expansion of a no burning zone for residential areas

3. Vancouver (part of Portland-Vancouver Air Quality Maintenance Area)

   a. Bring Carborundum Corporation silicon carbide plant into compliance with existing SIP

4. Longview

   a. Bring remainder of point sources into compliance

b. RACT for fugitive industrial emissions

c. Road paving and cleaning

d. Possible control on diesel emissions

e. Limitations of forest slash burning

5. Port Angeles

a. Reduction of log-yard fugitive emissions

b. Paving road shoulders and dirt parking areas

6. Clarkson

a. Reduction in emissions from Potlatch plant

b. RACT for fugitive dust in downtown

c. Lewiston, Idaho, emissions control

d. Possible redesignation to attainment on the basis of rural fugitive dust policy

C. CO

1. Yakima

a. Federal Motor Vehicle Emissions Control Program will be sufficient to achieve attainment by 1982

2. Spokane

a. FMVECP

b. Inspection and maintenance of vehicles

c. Area wide carpooling and vanpooling

d. Staggered work hours

e. Improved public transit, park-and-ride facilities

f. Bus ridership incentives (passes, gifts)

g. On-street parking limitations

h. Promotion of bicycle use

i. Traffic flow improvements

3. Seattle-Tacoma

a. The same as Spokane plus

b. Exclusive bus and carpool lanes

c. Standardization of off-street parking rates to minimize cruising

d. Land use controls

e. Controls on extended idling

C. O_x

1. Seattle-Tacoma

a. FMVECP and transportation control strategies of the CO plan

b. Inspection and maintenance of vehicles

c. RACT for existing stationary sources of VOC

a. Refineries

b. Storage tanks

c. Gasoline loading terminals and distribution plants

d. Service stations (gasoline)

e. Surface coating facilities

f. Degreasers

g. Reduction in cutback asphalt

III. NEW SOURCE REVIEW

The SIP requires that a new major source locating in a nonattainment area must achieve LAER. In addition, emissions from the new source added to other emissions must be less than the total emissions at the time the application was filed and thus meet the requirement for reasonable further progress. The plan does not state that offsets are required or that a growth allowance will be used, but either can be inferred from the regulatory language.

IV. EMISSION LIMITATIONS FOR FUEL COMBUSTION

A. SO_2

1. General state limit of 1000 ppm SO_2

2. Puget Sound AQCR (Pierce, King, Snohomish, and Kitsap Counties)

a. 1%-sulfur coal, by weight

b. and 0.4 ppm, 1-hour average

0.10 ppm, 24-hour average

0.04 ppm, 30-day average

0.02 ppm, annual average

3. Northwest AQCR (Island, San Juan, Skagit, and Whatcom Counties)

   a. 1.5 lb SO_2/MM Btu

B. TSP

1. State limit

   a. 0.10 grains/scfd

2. Puget Sound AQCR

   a. 0.10 grains/scfd, for sources built before 10/73

   b. 0.05 grains/scfd, for sources after 10/73

3. Northwest AQCR

   a. 0.10 grains/scfd

   b. Except for gas and distillate oil, 0.05 grains/scfd

4. Spokane

   a. Either RACT or 0.05 grains/scfd, whichever is more stringent

Note: Washington has instituted a separate Energy Facility Site Evaluation Council with total responsibility and authority for control of energy-related facilities. The regulations governing energy facilities are expected to parallel appropriate SIP requirements. The necessary regulations and agreement between the Council and DOE are still being developed.

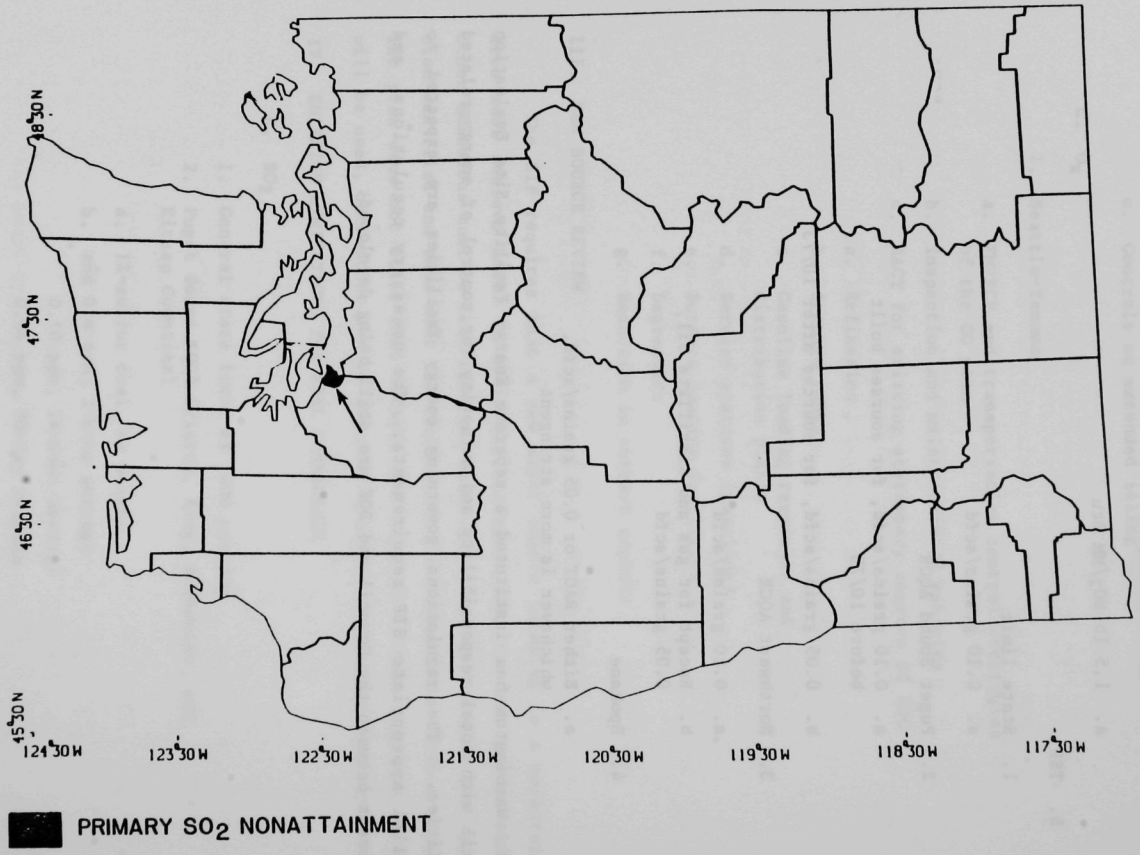


Fig. X.146. Washington: SO_2 Nonattainment Areas as Designated May 1979

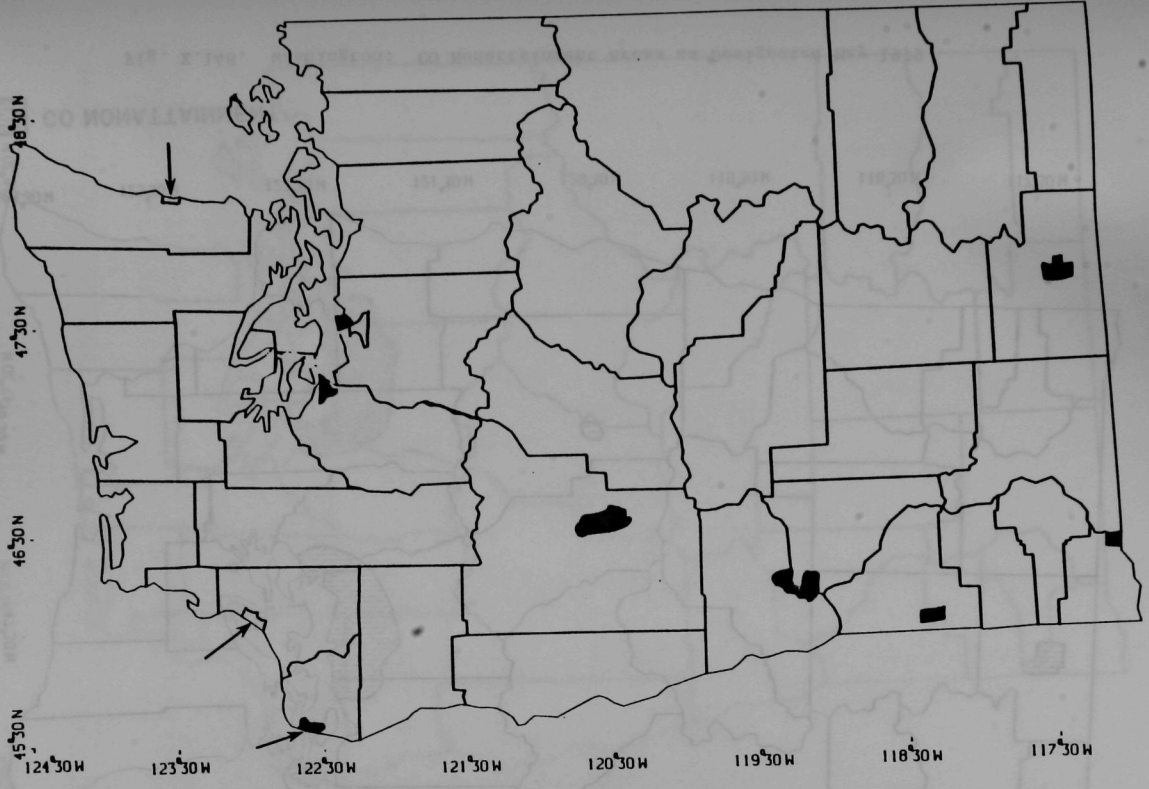


Fig. X.147. Washington: TSP Nonattainment Areas as Designated May 1979

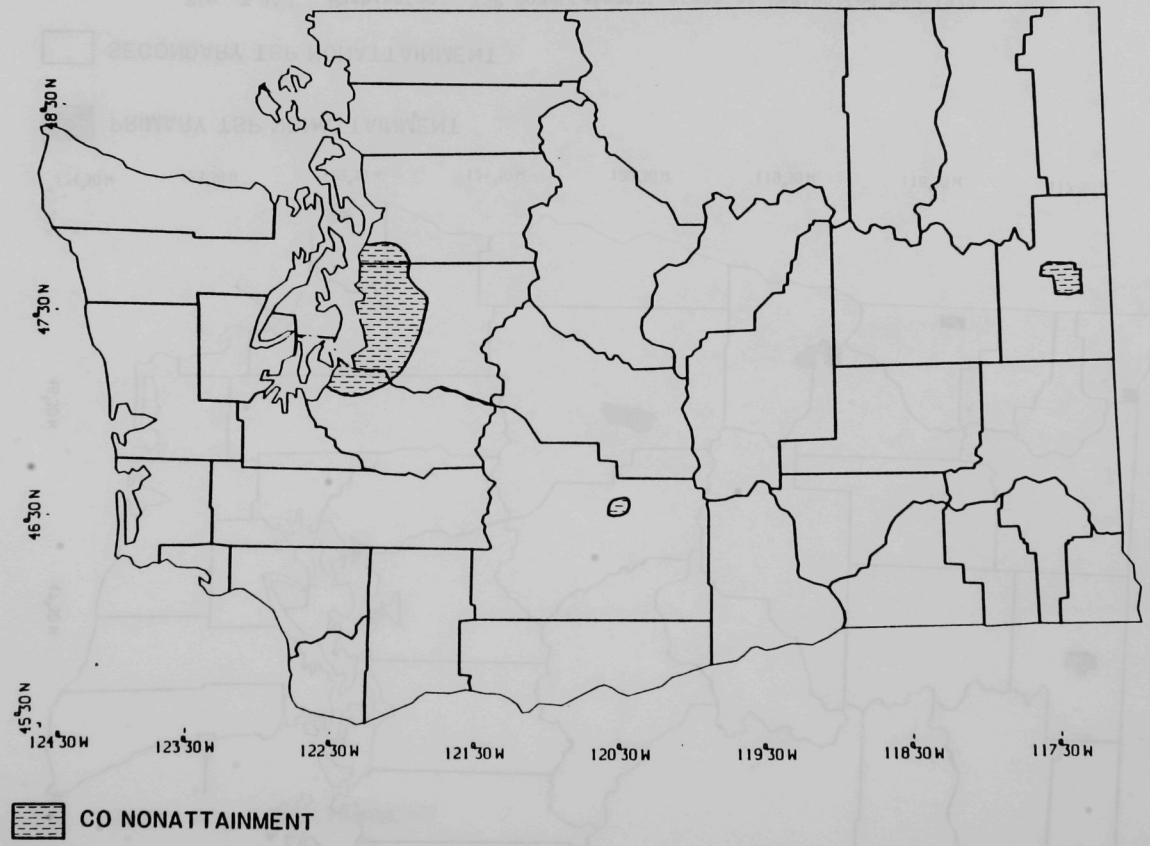


Fig. X.148. Washington: CO Nonattainment Areas as Designated May 1979

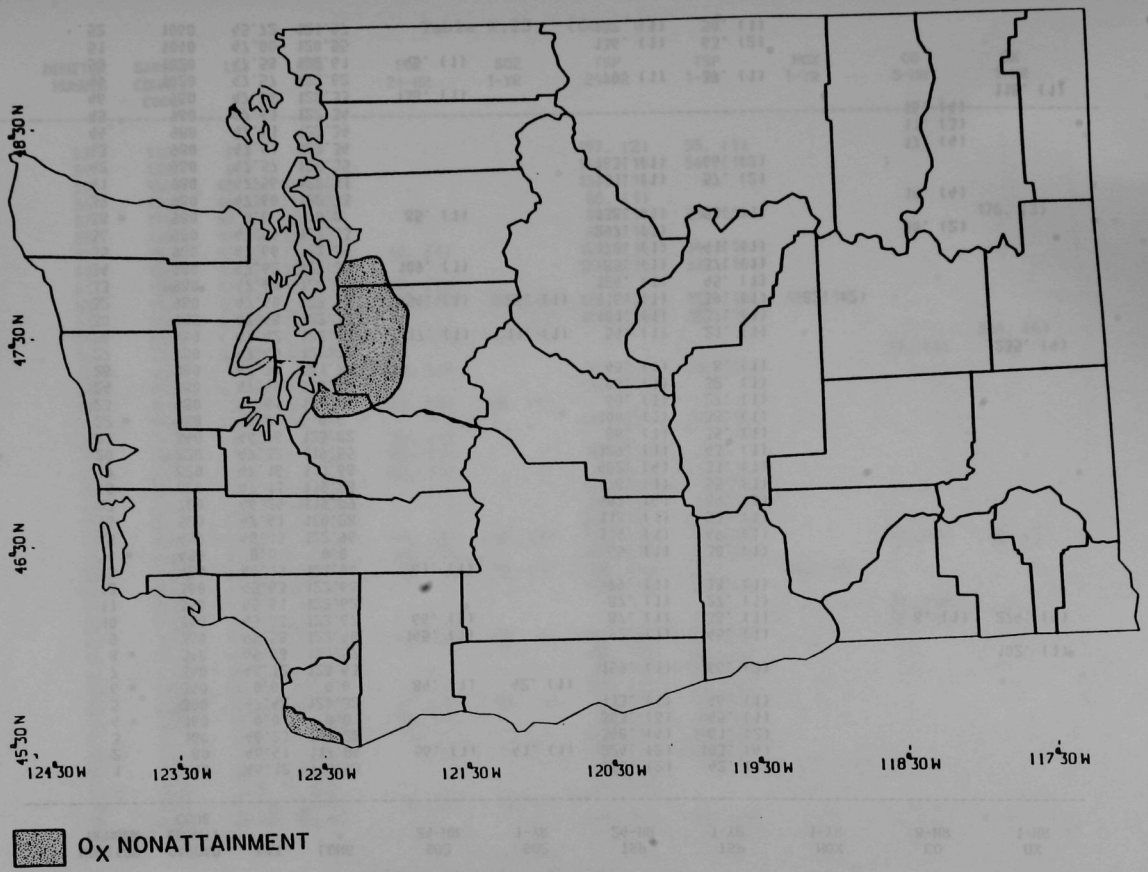


Fig. X.149. Washington: O_x Nonattainment Areas as Designated May 1979

Table X.23. Washington: SAROAD Monitor Numbers and 1975 Data
($\mu g/m^3$, or mg/m^3 for CO)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
1	40	46.12	118.98			260. (2)	42. (1)			
2	80	46.41	117.04	56. (1)	41. (1)	224. (2)	103. (4)			
3	160	46.23	119.22			340. (4)	61. (2)			
4 *	160	0.0	0.0			303. (3)	45. (1)			
5	300	47.42	120.32			113. (1)	46. (1)			
6 *	340	0.0	0.0	84. (1)	42. (1)					
7	340	48.12	123.43			159. (1)	66. (2)			
8 *	340	45.93	124.57							102. (1)
9	360	45.58	122.40	145. (1)		92. (1)	45. (1)			
10	360	45.63	122.67	66. (1)		87. (1)	38. (1)		8. (1)	274. (4)
11	360	45.61	122.62			87. (1)	27. (1)			
12	360	45.63	122.68			79. (1)	38. (1)			
13	480	46.13	122.96	61. (1)						
14 *	480	0.0	0.0			65. (1)	30. (1)			
15	480	46.13	122.96			114. (1)	49. (1)			
16	520	47.41	120.28			118. (1)	51. (1)			
17	720	46.24	119.09			409. (4)	84. (3)			
18	820	47.13	119.28			178. (1)	55. (1)			
19	820	47.16	119.68			402. (4)	31. (1)			
20	820	47.32	119.55			129. (1)	43. (1)			
21	840	46.98	123.82			86. (1)	35. (1)			
22 *	980	0.0	0.0			100. (1)	38. (1)			
23	980	47.61	122.20			60. (1)	27. (1)			
24	980	47.40	122.22			96. (1)	32. (1)			
26	980	47.70	121.79			40. (1)	8. (1)			
27	980	47.40	122.22							235. (4)
28	980	47.42	122.17	17. (1)	11. (1)	54. (1)	21. (1)			
30	980	47.48	122.20			101. (1)	37. (1)			
32	980	47.60	122.33	54. (1)	25. (1)	116. (1)	39. (1)	82. (2)		
33	980	47.60	122.33			124. (1)	45. (1)			
34	980	47.62	122.35	109. (1)		85. (1)	37. (1)			
35	980	47.66	122.39			170. (1)	41. (1)			
36	980	47.54	122.33			297. (3)			10. (2)	
38 *	980	0.0	0.0	85. (1)		138. (1)	53. (1)			
39	980	47.60	122.33						18. (4)	
41	980	47.56	122.31			161. (1)	57. (2)			
42	980	47.57	122.35			163. (1)	66. (2)			
43	980	47.61	122.34						17. (4)	
44	980	47.61	122.34						11. (3)	
45	980	47.61	122.34						16. (4)	
46	980	47.54	122.33	138. (1)						118. (1)
49	1020	47.57	122.62			79. (1)	37. (1)			
50	1020	47.58	122.61	45. (1)						
51	1040	47.00	120.55			136. (1)	63. (2)			
52	1060	45.72	121.47			132. (1)	50. (1)			

Table X.23. (Cont'd)

MONITOR NUMBER	SAROAD COUNTY CODE	LAT	LONG	SO2 24-HR	SO2 1-YR	TSP 24-HR	TSP 1-YR	NOX 1-YR	CO 8-HR	OX 1-HR
53 *	1120	0.0	0.0			197. (2)	55. (1)			
54 *	1380	0.0	0.0			148. (1)	56. (1)			
55	1540	48.18	117.06			133. (1)				
56	1540	48.18	117.05			88. (1)				176. (3)
57	1560	47.16	122.51			90. (1)	25. (1)			
58	1560	47.24	122.40			88. (1)				
59	1560	47.30	122.42	60. (1)		122. (1)	34. (1)			
60	1560	47.27	122.41			166. (1)	53. (1)			
61	1560	47.27	122.51	202. (1)						
62	1560	47.25	122.43	27. (1)	14. (1)	122. (1)	35. (1)	48. (1)		
63	1560	47.25	122.44			129. (1)	38. (1)			235. (4)
64	1560	47.25	122.44	153. (1)	46. (1)				11. (3)	
66	1560	47.25	122.44							
67 *	1560	0.0	0.0	77. (1)		130. (1)	38. (1)			
68	1560	47.24	122.40			139. (1)				
69	1940	48.49	122.55	164. (1)	28. (1)					
70	1940	48.42	122.34			119. (1)	38. (1)			
71 *	1940	0.0	0.0	54. (1)						
72	1940	48.47	122.33	54. (1)		63. (1)				
73 *	2000	0.0	0.0	136. (1)		79. (1)	36. (1)			
74	2060	47.49	117.57			148. (1)	48. (1)			
75	2060	47.42	117.53			146. (1)	20. (1)			
77	2060	47.66	117.36			264. (3)	80. (3)			
78	2060	47.67	117.42	117. (1)	26. (1)	182. (1)	65. (2)		12. (3)	176. (3)
79	2060	47.66	117.42	49. (1)		150. (1)	57. (2)			
80	2060	47.66	117.42	18. (1)	10. (1)	153. (1)		46. (1)		
82	2060	47.69	117.28			140. (1)	58. (2)			
83	2060	47.66	117.41						22. (4)	
84	2060	47.66	117.36						16. (4)	
85	2080	48.54	117.91	61. (1)	45. (1)	382. (4)	79. (3)			
86	2130	47.05	122.90			106. (1)	39. (1)			
87	2180	46.86	122.85			86. (1)	33. (1)			
88	2280	46.07	118.33			156. (1)	61. (2)			
89	2400	48.86	122.69	97. (1)	52. (1)	56. (1)	17. (1)			
90	2400	48.76	122.48	84. (1)		85. (1)	34. (1)			
91 *	2420	0.0	0.0			373. (4)	80. (3)			
92 *	2420	0.0	0.0			149. (1)	23. (1)			
93	2460	46.57	120.63			79. (1)				
94 *	2460	0.0	0.0			96. (1)				
95	2460	46.60	120.51	56. (1)	41. (1)					
96	2460	46.60	120.50			169. (1)	69. (2)			

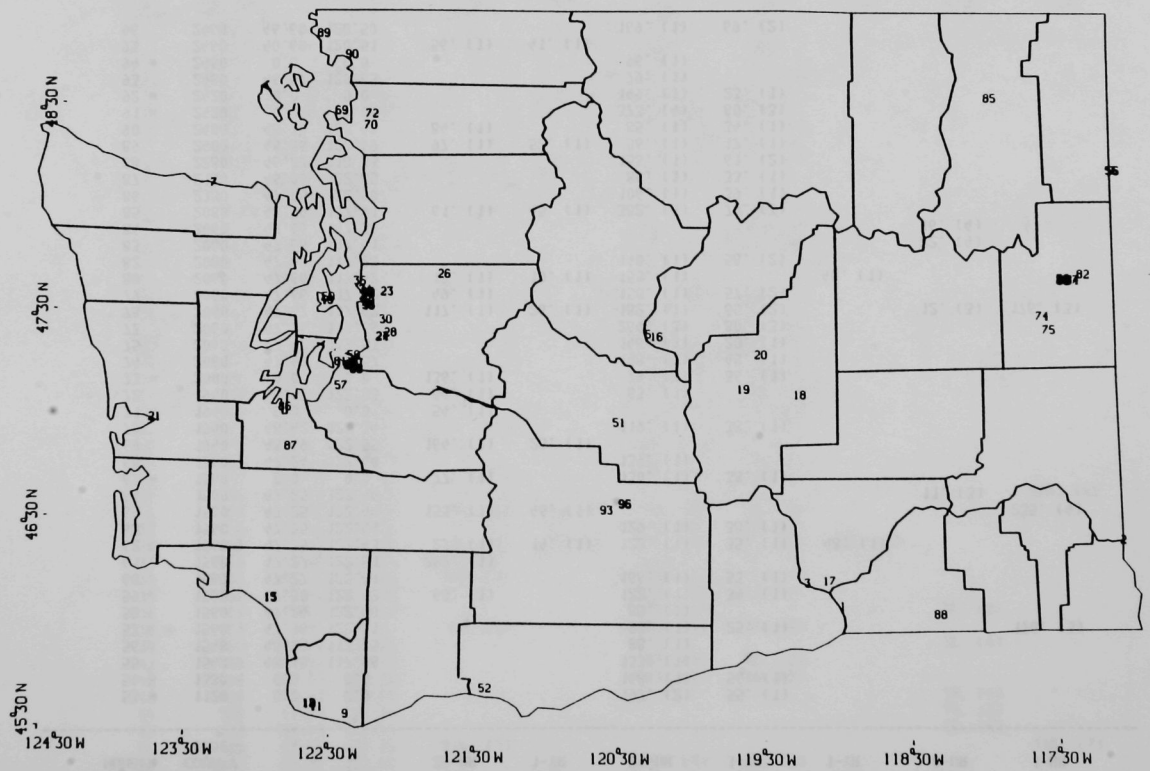


Fig. X.150. Washington: Locations of SAROAD Monitors
(See Table X.23 for Monitor Numbers)

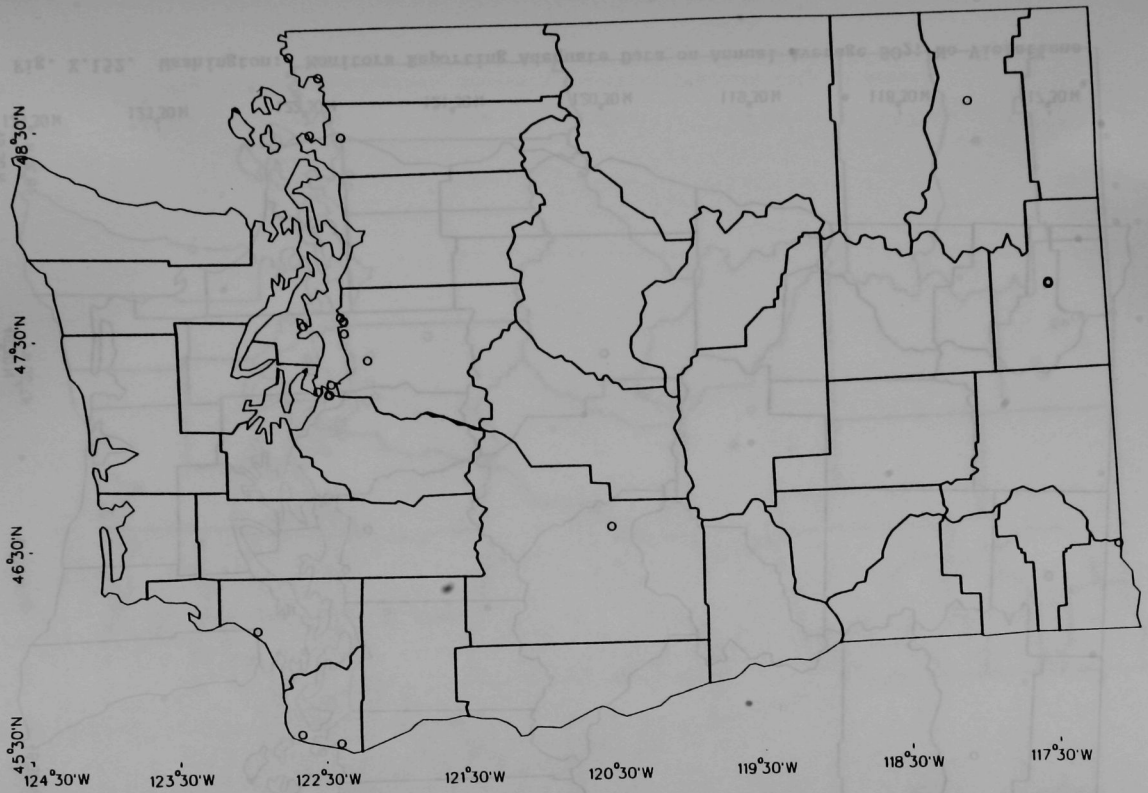


Fig. X.151. Washington: Monitors Reporting Adequate Data on 24-hr Average SO_2; No Violations

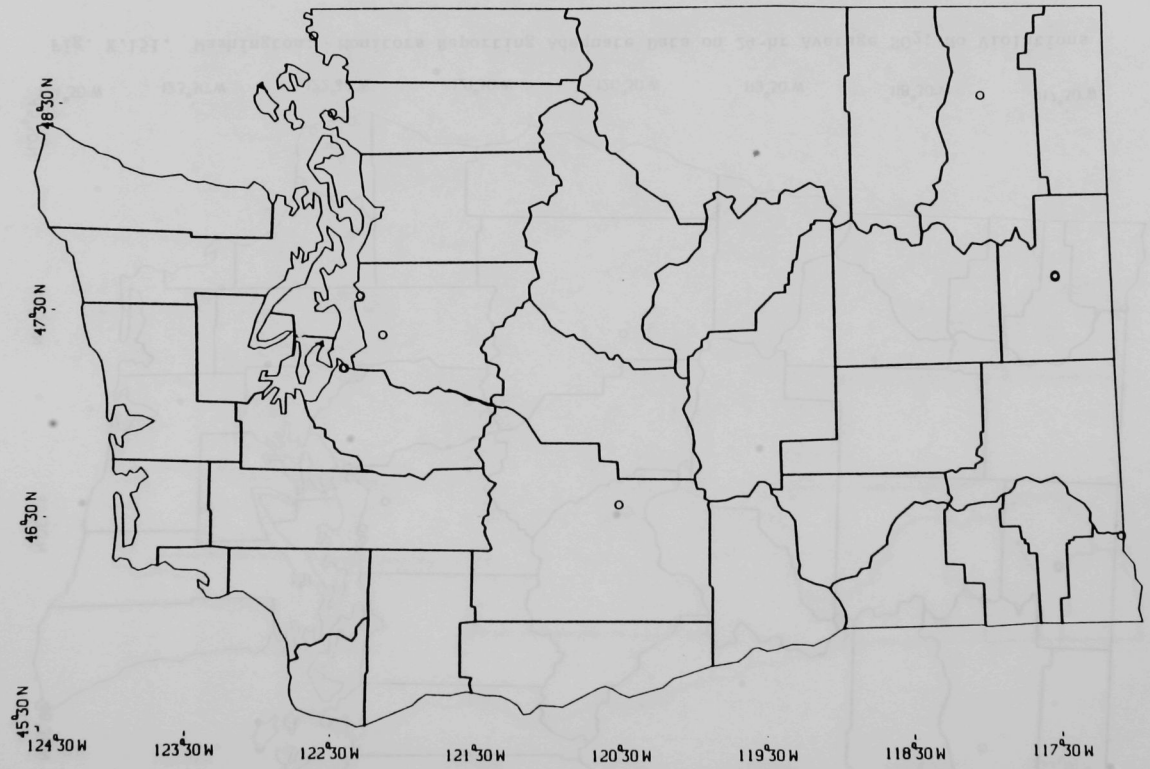


Fig. X.152. Washington: Monitors Reporting Adequate Data on Annual Average SO_2; No Violations

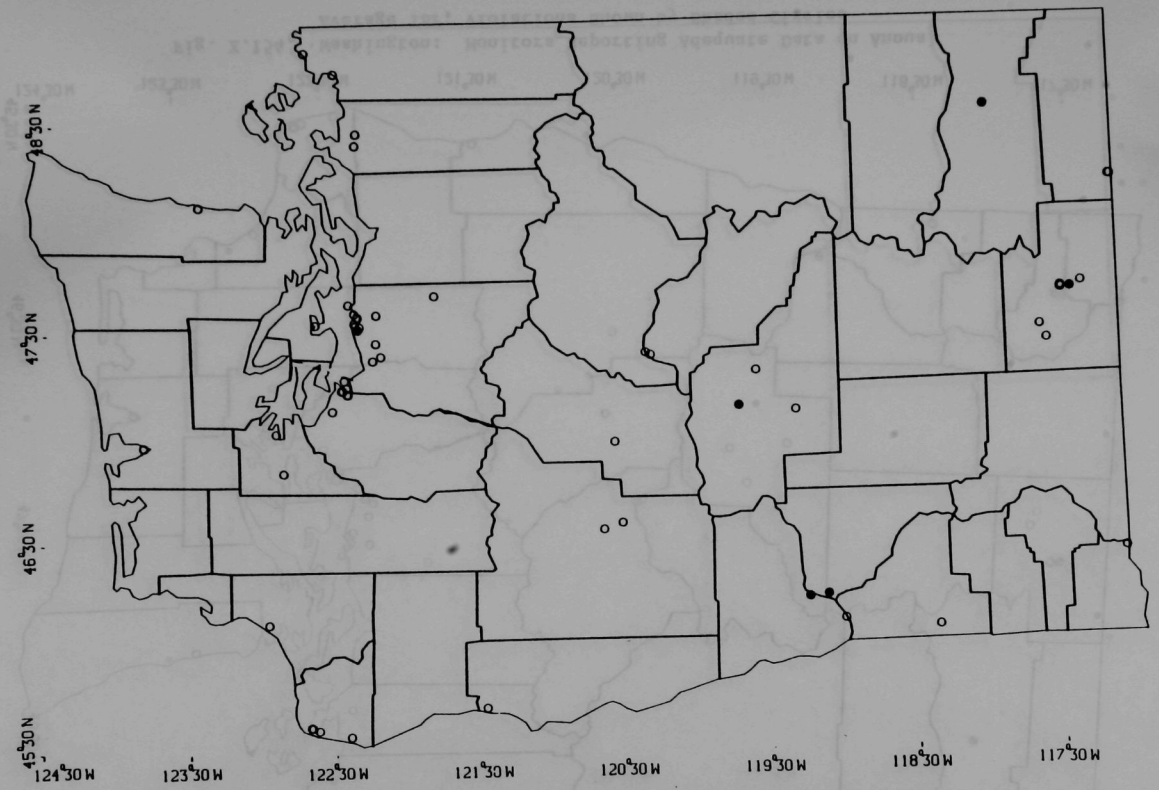


Fig. X.153. Washington: Monitors Reporting Adequate Data on 24-hr Average TSP; Violations Shown by Shaded Circles

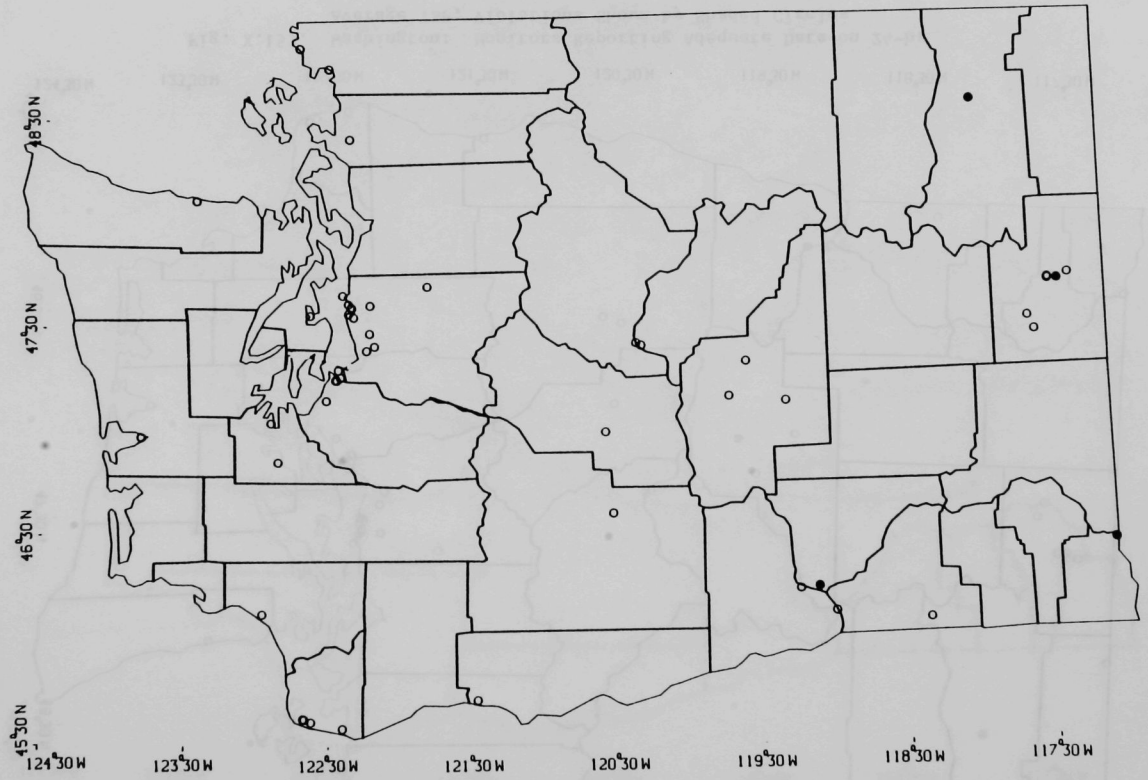


Fig. X.154. Washington: Monitors Reporting Adequate Data on Annual Average TSP; Violations Shown by Shaded Circles

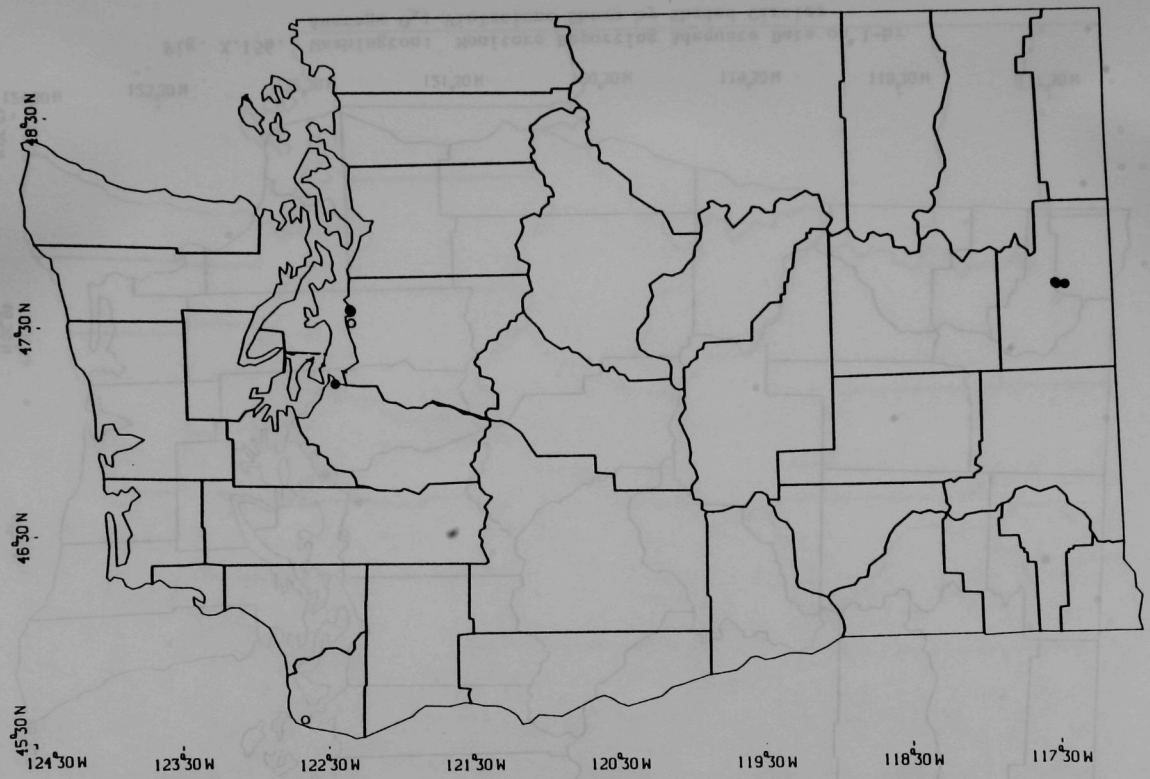


Fig. X.155. Washington: Monitors Reporting Adequate Data on 8-hr Average CO; Violations Shown by Shaded Circles

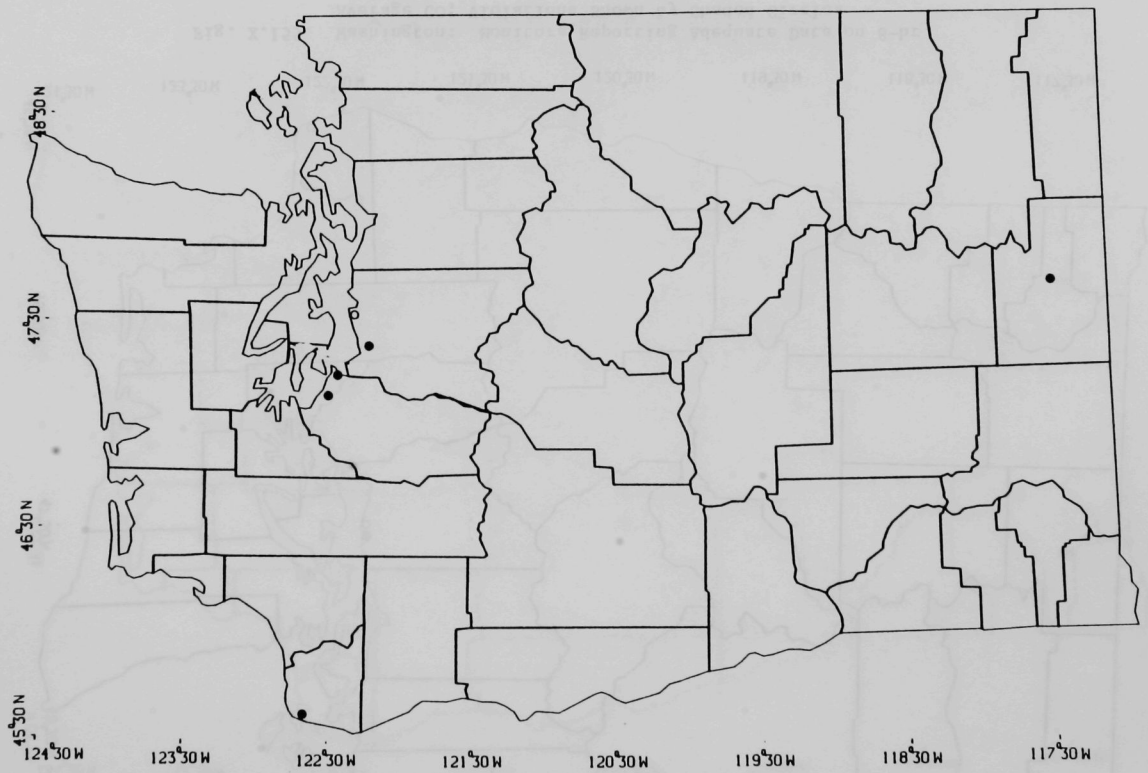


Fig. X.156. Washington: Monitors Reporting Adequate Data on 1-hr Average O_x; Violations Shown by Shaded Circles

Fig. X.157. Washington: Monitors Reporting Adequate Data on Annual Average NO_x; No Violations

Table X.24. Washington: Power Plant and Fuel Use Data

WASHINGTON — POWER PLANT DATA

PLANT #		PLANT NAME	LATITUDE	LONGITUDE	OPERATING CAPACITY(MW)	CONVERTIBLE CAPACITY(MW)
1		CENTRALIA	46.76	122.86	1330.00	0.0
2	N	HANFORD	46.24	119.52	862.00	0.0
3	N	WNP-1	46.24	119.52	862.00	0.0
4	N	WNP-2	46.24	119.52	862.00	0.0
5	N	WNP-3	47.16	123.74	862.00	0.0
6	N	WNP-4	46.24	119.52	862.00	0.0
7	N	WNP-5	47.16	123.74	862.00	0.0

N NUCLEAR * NOT PLOTTED

WASHINGTON — FUEL-USE DATA

PLANT #		PLANT NAME	% SULFUR IN COAL	AMOUNT OF COAL	% SULFUR IN OIL	AMOUNT OF OIL	AMOUNT OF GAS
1		CENTRALIA	0.51	4008.50	0.30	69.00	0.0
2	N	HANFORD	0.0	0.0	0.0	0.0	0.0
3	N	WNP-1	0.0	0.0	0.0	0.0	0.0
4	N	WNP-2	0.0	0.0	0.0	0.0	0.0
5	N	WNP-3	0.0	0.0	0.0	0.0	0.0
6	N	WNP-4	0.0	0.0	0.0	0.0	0.0
7	N	WNP-5	0.0	0.0	0.0	0.0	0.0

N NUCLEAR * NOT PLOTTED

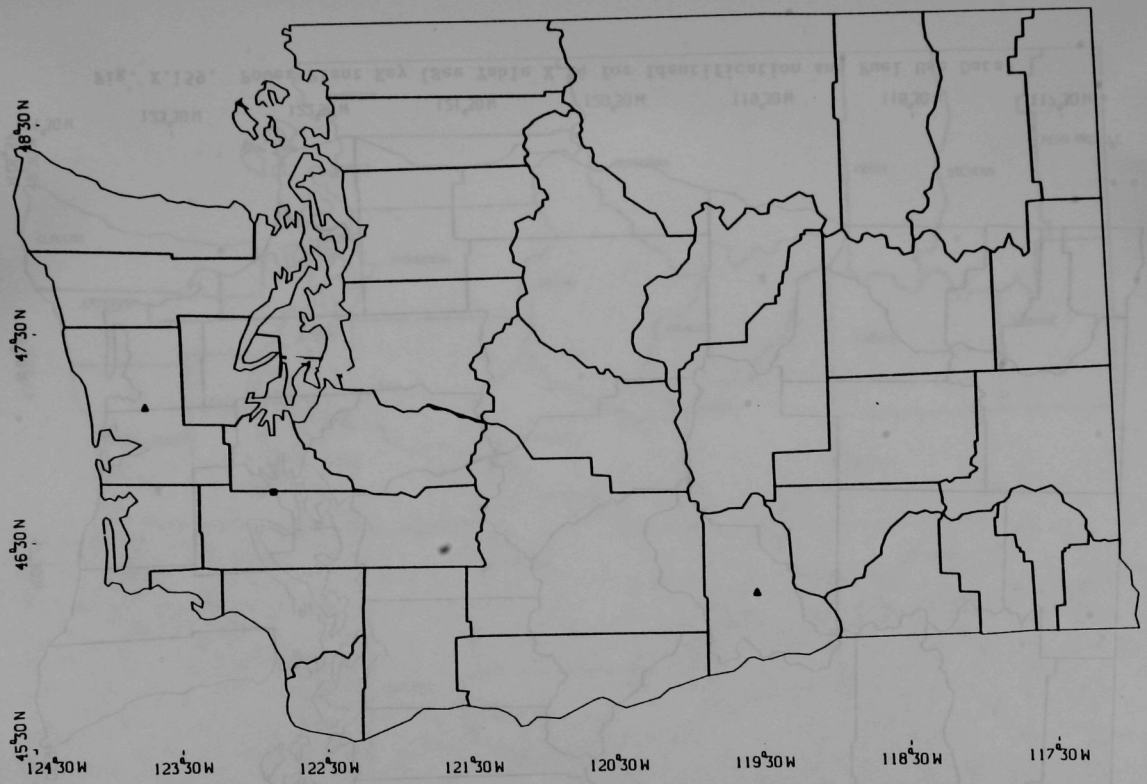


Fig. X.158. Power Plant Locations (Square = Fossil Fuel: Shaded, ≥1000 MW; Open, <1000 MW. Triangle = Nuclear)

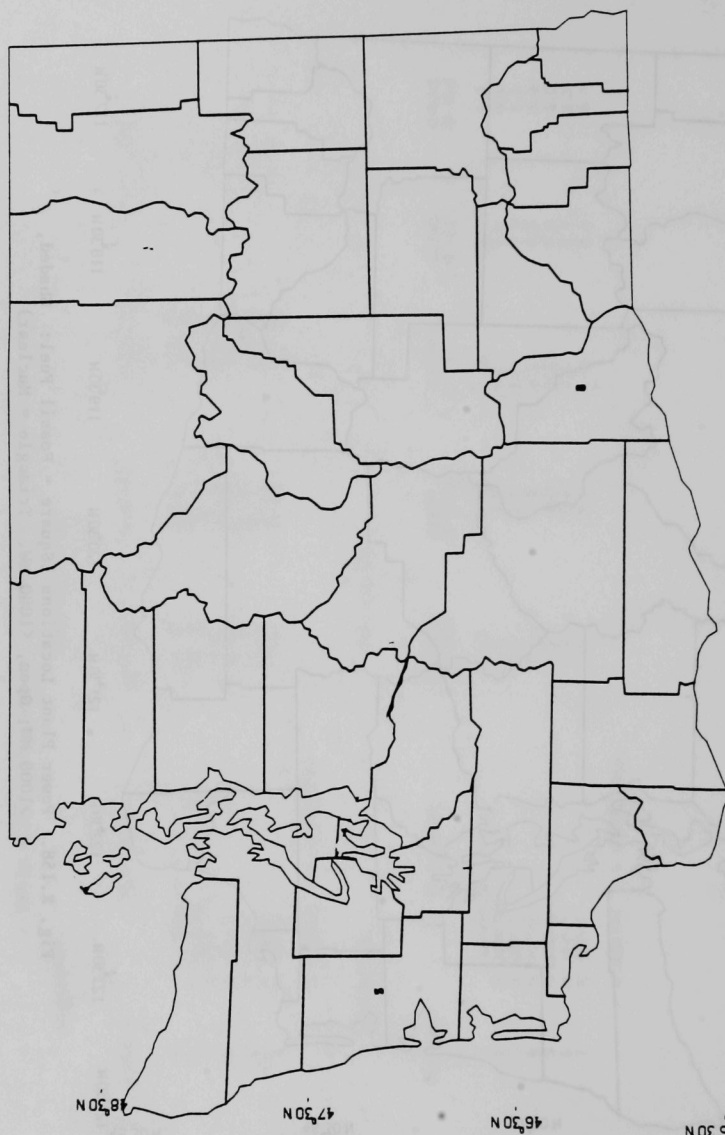


Fig. X.159. Power Plant Key (See Table X.24 for Identification and Fuel Use Data)

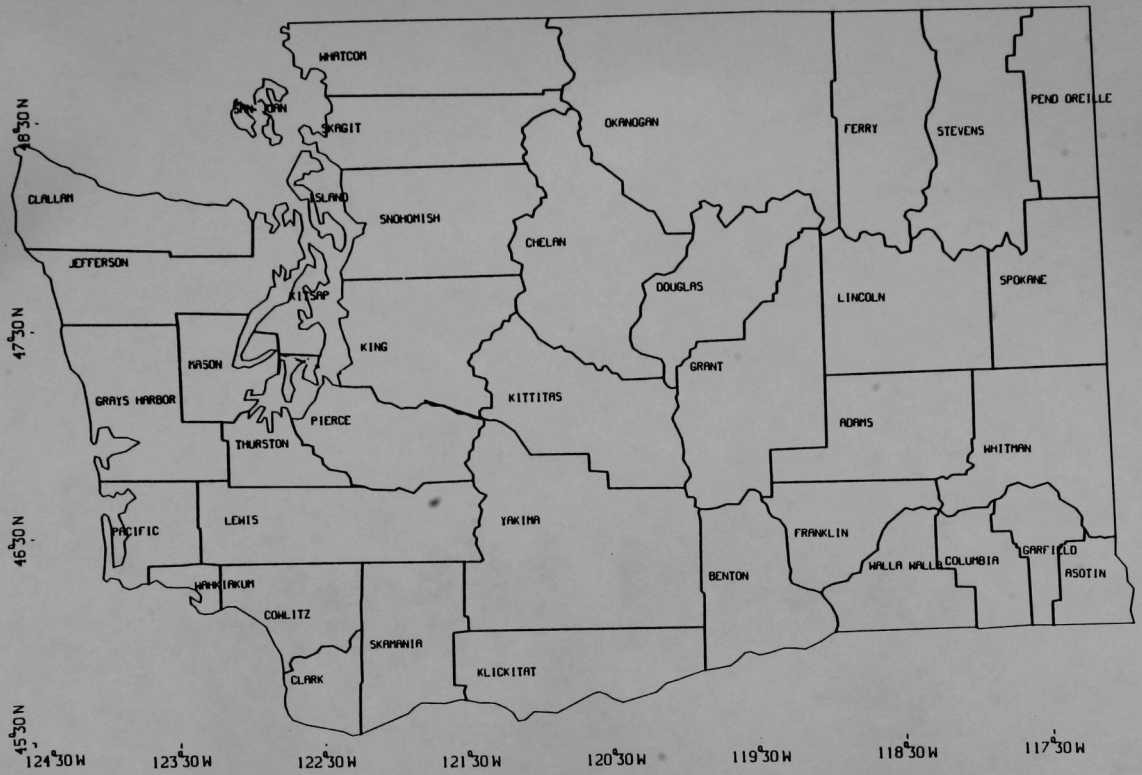


Fig. X.160. Washington: Key to Counties

B